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FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

Vol. 85, No. 1 JANUARY, 1932 Member A.B.C.-A.B.P.

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Photo directly above shows the Barton Pump delivering 550 gallons per minute in two powerful, high pressure streams.

Photo at top at right shows the pump installed in the boat. Note that it is fully accessible, and, therefore, easy to operate and care for.

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Office of the Chief.

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C V Bachelle

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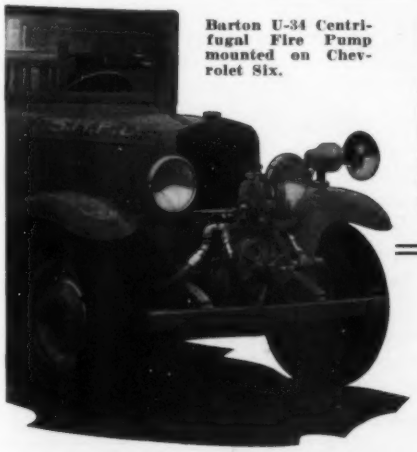

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FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

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Here We Are!

WITH this issue, FIRE ENGINEERING makes its bow as a monthly, all dressed up and primed to go speedily onward and upward to greater achievement.

As we look back over our fifty-four years of unbroken service and leadership in the field of fire fighting and fire prevention, what a glorious future we see ahead for all of us—what great opportunities for real accomplishment!

Depressions—and FIRE ENGINEERING has seen many of them in its time—have always proven to be nothing more than resting places on the road to bigger things.

There's lots to be done. Let's go!

The Publishers

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WHEN PIG IRON DROPPED 50% IN 1907, ANDREW CARNEGIE DECLARED:

"This panic will soon run its course and pass away leaving no impediment to the return, in due season, of another period of wholesome, because needed, expansion of our resources. . . .

"We have had the greatest expansion of modern times. Reaction had to come—will prove healthful. Nothing can stay the rapid progress of the Republic. She is all right."

WHEN DEEP, DARK GLOOM RULED IN 1921, THOMAS FORTUNE RYAN SAID:

"Our merchants have been buying only what they can sell quickly for cash. The consumer has had to listen to so much pessimistic talk that he buys only what is absolutely necessary. People everywhere have been scared. They are getting over that.

"Our people are the greatest consumers of food and manufactured articles in the world in normal times—and normal times are coming back. . . ."

AMERICA CAME THROUGH!

In 1893 stark ruin stalked through the land. 467 banks failed in a few months. Mills, furnaces and factories shut down everywhere. Bankruptcy was on every hand. America had twice as many unemployed per thousand population as she has today. But she put them all back to work.

In 1907 panic broke loose. The production of pig iron dropped 50% in less than a year. All but the strongest men lost heart — "We are ruined," they declared, "recovery cannot come in our time." Yet in two years prosperity had returned.

In 1921, when many honest and thoughtful people were predicting worse conditions, the country was already beginning to climb to the greatest era of prosperity it had ever experienced.

History tells how America had fought and won 19 major depressions. Good times always follow hard times, as surely as day follows night. Prosperity always comes back. It is coming back *this* time, too.

Above all things, let us have faith.

America Has Beaten 19 Major Depressions She will Beat this one

THE NATIONAL PUBLISHERS ASSOCIATION

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FIRE ENGINEERING

The Journal of the Fire Protection Profession

Volume 85 JANUARY, 1932 Number 1

With the Editor

Where Politics Injures All

The business of fire insurance is probably more concerned with the efficiency of fire fighting organizations than any other large organized industry. Fire insurance rates cannot be reduced unless fire losses assume a like trend.

It is most significant, therefore, that the National Board of Fire Underwriters, an engineering organization maintained by insurance companies, should include in their Standard Schedule for rating cities from the standpoint of fire defense, the following clause:

"The Chief's tenure of office: The chief shall hold office for an indefinite term and shall be removable only for cause after public trial."

Where the chief is removed without cause, the city is penalized with ten points of deficiency.

As this standard schedule is employed by rating organizations throughout the country for determining insurance rates, politics, insofar as the head of the fire department is concerned, has a direct bearing on the insurance rates granted cities.

If insurance interests consider the permanency of the chief of such importance, it is reasonable to conclude that political interference would directly affect the fire loss of the city. A higher insurance rate for a city, or an increased fire loss, would hit the pocketbook of every citizen.

Where tenure of office of the Chief is at the mercy of politicians, the feeling of insecurity so created would not only lower the morale of the chief, but all the men under him as well. If it is known among the rank and file that the politicians can "get" the chief, through trumped-up charges, his influence over the men is certain to be very much reduced. Discipline and efficiency will suffer as a result thereof.

The best fire departments in the country are those which have capable chiefs who have the assurance of their jobs despite political changes; likewise, the poorest and most inefficient departments are those where the chief is changed with each change of political administration.

The fire service is the one branch of city government wherein politics can do no good to any one, but, instead, harm to all. That is why many states, despite political pressure to the contrary, have put on the statute books civil service laws which protect the fire chief as well as his subordinates.

If no state laws are in force covering this point, there is nothing to prevent a city from insuring the retention of a capable chief by enacting suitable legislation. Now as never before do we need capable and experienced fire officers. Fire hazards have increased with the development of new industries; fire hazards have likewise increased during the past two years as a result of relaxed fire prevention activities on the part of industrial concerns, incidental to the present period of depression.

The best insurance a city now-a-days can have against extensive fire losses, and increased insurance rates, is an efficient and well equipped corps of fire fighters with a capable and experienced chief.

Fred. Sheppard

Speed and Safety at Night Fires Result of

Lighting Up the Fire Grounds

By CHIEF HENRY A. FOX,
Fire Department, Boston, Mass.

Chief Henry A. Fox

IN this modern age we hear a great deal about efficiency. It is the principal topic of the executives of all the various enterprises of the country. The head of every concern is always trying to devise some method by which his business can be operated on a more efficient basis. The principle followed in nearly all cases is to speed up operations and conserve waste and energy.

I know of no better way for a Fire Chief to increase the efficiency of his department than by "Lighting up the Fire Grounds." It is my opinion that this modern practice is one of the major improvements in fire fighting methods that has been evolved since the introduction of motor apparatus in the Fire Department several years ago.

Portable Searchlights First Employed

Up to a few years ago, working in the dark when extinguishing fires was considered a natural handicap that just simply had to be endured. In the old days torches helped dispel the gloom in very limited areas; then kerosene lanterns came into use. About fifteen or twenty years ago, portable electric lamps were added to the equipment of progressive Fire Departments for the use of the individual members to be carried in place of oil lanterns.

There was nothing done, however, in the nature of general lighting until twenty or more years ago when a search light unit was placed into service by the New York Fire Department. That unit consisted of a steam-driven generator with search lights mounted on a truck. While fair results were obtained, the system had its draw-backs because it was not flexible enough and the glare of the search lights was perhaps more of a hindrance than a help.

Development of the Flood Light

A few years later the flood light was developed. The rays from these lights are diffused instead of being concentrated, as in the search lights, with the result that the glare has been mostly eliminated and nearby areas are flooded with light. We now arrive at the time when flood lights were used to more or less extent but with no source of current other than that which could be obtained by finding a convenient socket in some building.

About six or eight years ago, progressive manufacturers of isolated lighting plants in order to demonstrate their products to farmers and other prospective users, mounted small units on trucks and traveled around the country. One of these outfits was seen by a member of a department who was seeking some improved method of obtaining better lighting facilities, and upon his recommendation a portable lighting plant was bought for that department. Since then many departments have added this very essential feature to their equipments.

In all emergency operations there is naturally a great deal of lost motion. You can minimize this lost motion at fires by proper illumination. When we look back and realize how we had been working in the dark for so many years at fires, we wonder that we were ever able to accomplish what we did.

What Science Has Done for Lighting

Today, modern science has given us every means for lighting up our fire grounds; the separate lighting unit which consists of generators mounted on a truck that are operated by the gasoline engine, these generators furnishing current for the powerful flood lights which are portable and can be placed in advantageous positions; powerful search-lights mounted on apparatus; marine lights and the small portable lights carried by officers and men. I am very pleased to say that in my own city of Boston, in addition to the lighting units of the department, every fireman is equipped with a so-called miner's light.

Benefits Cannot Be Overestimated

The benefits derived from proper illumination at fires cannot be over emphasized. A man will make fewer mistakes if he can see what he is doing. A Chief is certainly better able to watch the progress of a fire and the operation of his department where the ground has been illuminated than where it has not. "Light up the fire grounds," and you will prevent the building from lighting up itself. It has been an axiom among firemen, "that if it was going through the roof" you had the fire. I sometimes wonder if this display of confidence was brought about by illumination.

Proper illumination at fires will not only speed up your department's operations in addition to conserving waste and energy, but it will also reduce the mortality and injured list. There is nothing that I know that gives a Fire Chief more concern than the safety of his men. A dangerous wall, a tottering chimney or flag pole are readily discerned by proper illumination.

Light up your fire grounds and you will increase your efficiency, thereby reducing your fire losses. It will produce the maximum return on the minimum amount of expenditure.

(From a paper read before the annual convention of the International Association of Fire Chiefs at Havana, Cuba.)

How Vienna Protects Its Property

Chief Anton Wagner
(Branddirektor)

By BERNARD PEILL

in the City and in the Suburbs Against a High Fire Loss

COMPARATIVELY speaking American Fire Departments are very young—in some communities such organizations are now being formed for the first time, while those that are able to trace their history back one hundred years feel rather ancient in firemanic annals. Yet back in 1685 the city of Vienna, Austria, had already organized its professional Fire Department, at present considered the oldest such organization throughout the continent of Europe.

Since it was formed, the headquarters was always in the old historical building Am Hof 9/10, Vienna 1, and it is located on the same site there even today.

Some time about 1785, or one hundred years after it was formed the department received uniforms. The first fire alarm telegraph system was established in 1854 when there were 120 paid firemen. Eight years later, in addition to the headquarters building, suburban fire stations were introduced. At that time there were 287 firemen with 142 horses. The first fire alarm boxes appeared in 1878 and in the same year Vienna purchased its first steamer.

When the famous Ring Theatre was destroyed in 1881 by fire, and more than six hundred persons lost their lives, there were only two steamers in the whole city. Hand fire engines were used until as late a date as 1895 or thirty-six years ago.

Introduction of First Aerial

The first aerial ladder truck with compressed air tanks was used in 1899. At that time there were six steamers in service, a surprisingly small number considering that sufficient fire hydrants had been installed in all parts of the city since 1853. In 1872 the first high pressure water system was placed in service to protect the various risks in Vienna.

The first motor driven chemical car was used in 1903 and three years later the headquarters as well as the Simmering Fire Station received complete automobile equipment consisting of electric-driven chemical apparatus, ladder trucks, steamers and cars for the officers. The first gasoline pumpers were introduced at the beginning of the World War. By 1920 there were 107 motorized units and only thirteen horse driven apparatus in the department.

At that time there were fourteen stations in the city manned by paid firemen while in the exterior districts of Vienna there were forty-five volunteer Fire Departments with more than 1,500 men, provided in the main, with horse-driven apparatus.

Modern Apparatus Purchased

In 1924, Branddirektor Ing. Anton Wagner was appointed Chief of the Fire Department. He immediately inaugurated a program of modernization—to replace the old electric-driven and horse-driven apparatus by motorized units, to abolish the volunteer fire companies in the suburbs, and to install a modern fire alarm system.

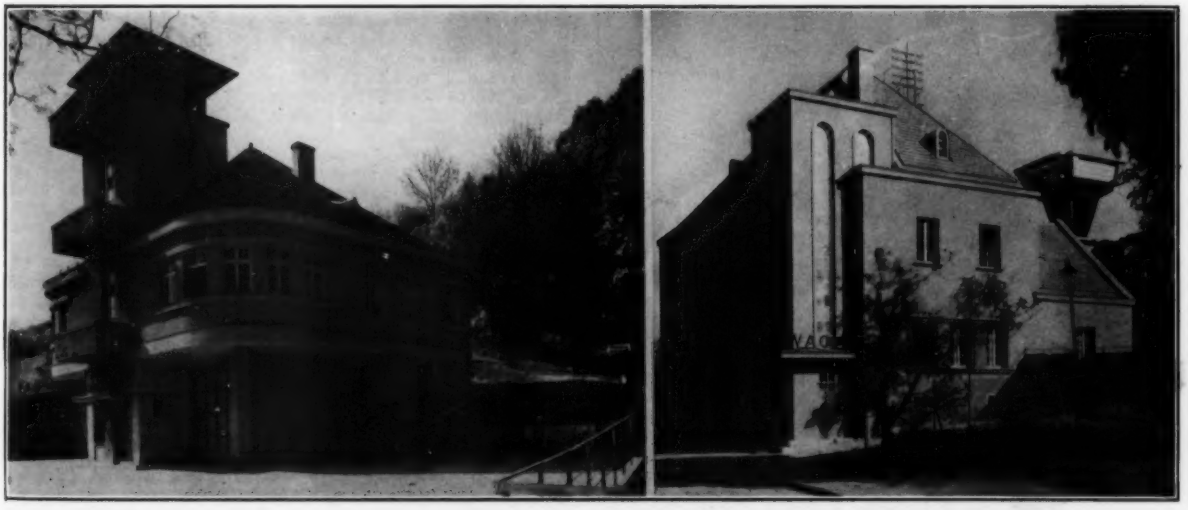
Only the steamers have been done away with, while the electrically driven apparatus has been replaced by modern apparatus. Fifty pieces were converted and 130 modern units were purchased. By the end of 1930 there were 183 motorized units of which forty were pumpers.

At present there are but seven volunteer fire companies in rural residential districts and they receive their orders from Headquarters.

The number of Fire Department stations have increased. There are now one Headquarters Building, six chief stations and twenty-five smaller fire stations in the city.

There are sixty men on duty at all times in the Headquarters Building, twenty-two in the chief stations and eleven men in the smaller houses. The two-platoon plan was established during the period of 1919-20.

In the headquarters station there are housed, two officers'

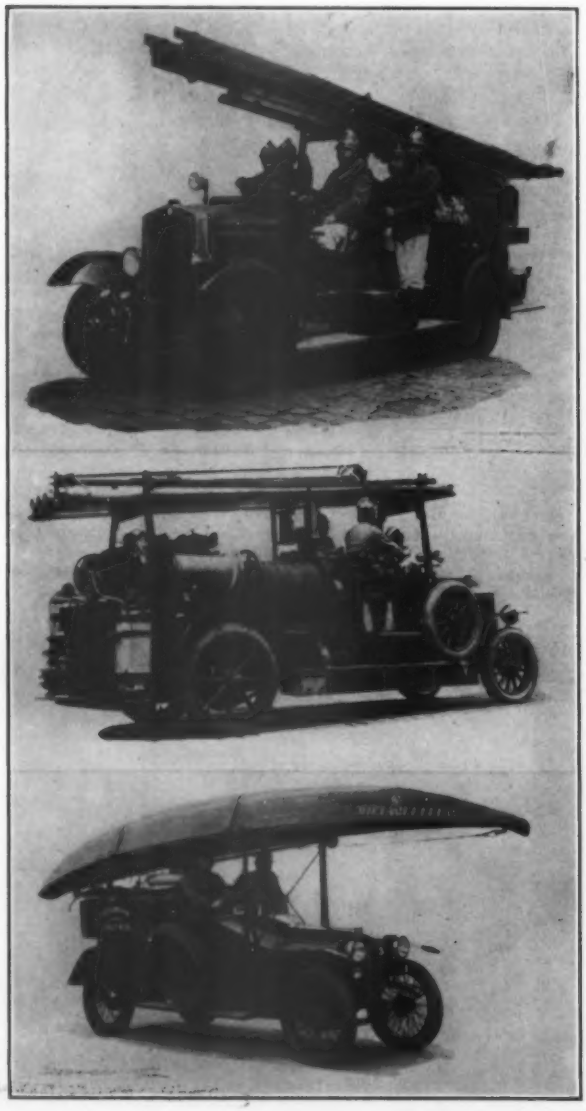


Two Examples of Modern Viennese Fire Station Architecture

Left—This house was opened during the reorganization of the Fire Department, 1925-30. It is a suburban station housing one engine company with eleven men and two pieces of fire apparatus. Right—Another fire station opened during the same period and which houses a company provided with two pieces of apparatus and having a compliment of eleven men.

cars, two city service trucks, two chemical engines which have been replaced by booster tank equipped apparatus, two Magirus and Metz 111-foot aerial ladders, six pumpers, besides special equipment. Every chief station has one officers' car, one chemical or booster-tank car, one city service truck, one Magirus aerial ladder, one pumper and some special appliances. The smaller stations have a chemical car or booster tank car besides a motorized pumper. A few of the smaller stations have three pieces of apparatus, an aerial ladder with chemical engine, a city service truck and a pumper.

The running card is so arranged that for every alarm from the interior section there must respond, at least, one officers' car equipped with rescue appliances and carrying hose, the district officer, the captain and eight firemen; one city service car; one chemical car or a car with a booster tank; one aerial ladder truck and the pumper of the nearest station. About twenty firemen in all respond or enough to stretch the necessary hose lines, carry on salvage work and use the life net. For chimney fires, brush, automobile fires and alarms caused by suspicious smoke, only a chemical car or a booster tank car is despatched. The smaller emergency work is performed by a city service truck which carries all emergency tools and appliances. Where human life is in danger as at a building that has been wrecked by an explosion, the officers' car of the nearest chief station must also answer the call. However, in many of these cases, a special call is sent to headquarters for emergency trucks, rescue wagons or wrecking apparatus.



Three Types of Apparatus in Use in Vienna

Upper—In each of the thirty-two fire stations of Greater Vienna, there is a gasoline pumper of the type illustrated capable of delivering 110 g.p.m. at about 60 pounds pressure. The pump is in front of the radiator. Center—Special emergency car with an electric generator and cable reel for the use of the two small "Diving Pumps" located at the rear of the car. Lower—Special rescue car that is used for water accidents.

There is also the "Volunteer Ambulance Society," which is required to answer such alarms. It has ambulance cars with medical equipment and manned by full paid surgeons.

The fire alarm headquarters is located on the second floor of the central fire station and during 1927-9 it was provided with all the instruments found in American fire alarm central stations. There are circuits for thirty-three fire stations and for more than one thousand street fire alarm boxes. As most of the alarms are transmitted by telephone, the central station is able to send the alarm upon tapper circuits. On the wall of the fire alarm headquarters and in the office of Chief Wagner are large maps on which electric lights are placed wherever there is a fire station. These lamps light to show which of the companies are responding. Besides the tapper and box circuits, the department has a special telegraph service with stations in each fire house, and a station high up in the 360-foot bell tower of St. Stephan's Cathedral.

In this cathedral, night and day, there is a fireman watching for fires. This custom has been handed down from the time the Turks laid siege to Vienna in 1529 and in 1683. The Morse telegraph keys are to be replaced by electrically operated typewriters as soon as funds are available. Public and private fire alarm boxes have been placed in department stores, factories and so forth, but in Central Europe such boxes are very little used. Most of the messages are transmitted by telephone.

The appliances used in the Vienna Fire Department are different from American practice. There is only a single narrow hose which, however, is able to withstand very high pressures from the pumpers. The centrifugal pumps of the Vienna gasoline operated pumpers are located in front of the motor's radiator, similar to the well known Ahrens-Fox engine in the United States. The chemical apparatus and booster tanks have a capacity of about 125 gallons which is usually sufficient for the ordinary fires. The booster pumps are not operated by the traction motor but by a special 20-30 horsepower motor. These special booster pumps may be carried by four or even two men and placed near wells in the rural sections or wherever water can be found.

The Vienna Fire Department has fourteen special small size pumps, two electrically operated and twelve operated by gasoline motors. Where water is to be drafted from great depths, these pumps are lowered into the water. The seven volunteer companies are equipped with these special motor pumpers as they are ideal for rural service in the towns and villages outside of the city.

In the oldest section of the city, cellars are often two to five floors deep. Smoky cellar fires are therefore of great danger to the firemen and cause considerable work.

Therefore, in addition to the assortment of oxygen helmets and filter masks, the department has a special rescue truck equipped with two large air tanks which are able to supply air to five or six smoke-helmet air lines. Every man in the department, from the Chief down, has a smoke mask of his own.

A special school is established in the two-floor deep cellar of the Central Fire Station. Here dense, smoky fires are started so that the firemen may become experienced in fighting the smoky blazes. Each of the thirty-two fire stations has its own drill tower so that pompier ladder work, extension ladder drills and other evolutions may be followed every day.

The department is also provided with portable motor-propelled smoke ejectors to be carried directly into the cellars. Electric power for the motors is furnished by cables stretched to the generator on the truck. The generator is also used to supply current for searchlights, flood lights and projectors.

Besides the special appliances described there are emergency trucks for brush and forest fires, provided with all sorts of tools and designed for fighting fires remote from a good supply of water; rescue cars equipped with boats for saving life in water accidents; wrecking wagons equipped with heavy tools; cars with special foam equipment; motorcycles for the chimney sweepers of the department; strong cranes, and appliances for carpenter work.

In four more years the Fire Department of "Der Stadt Wien" will have an anniversary to be proud of. It will be 250 years old.

Rules for Distinguishing Valid and Invalid

Restrictive Fire Ordinances

By LEO T. PARKER, Attorney-at-Law

ON numerous occasions municipal lawmaking bodies have endeavored, by enaction of ordinances and rulings, to regulate the conduction and operation of industries, restrict the construction or usage of buildings and plants, and control the movements of pedestrians and vehicles only to discover that the laws or rulings are technically void and unenforceable.

Frequently, such laws and regulations are sponsored and approved by fire department officials who, with proper knowledge of the requirements of valid restrictions, may have recommended valid ordinances and rulings. Therefore, the purpose of this article is to review very recently decided higher Court cases which clearly illustrate the distinction between valid and invalid regulations.

Subjects Treated in This Article

History of Zoning Laws

Building Restriction Ordinance Held Void

Enforcement Delegated to Officials

Distinction Between Power to Make and Execute Law

When a License Law is Void

Plant Owners Avoid Ordinance

History of Zoning Laws

It is well known that building zone laws are of modern origin. They began in this country about twenty-five years ago. Until recent years, urban life was comparatively simple. However, with the great increase and concentration of population problems have developed, and constantly are developing, which require additional restrictions in respect of the use and occupation of private lands in urban communities.

The wisdom, necessity and validity of regulations, as applied to existing conditions, are so apparent that they are now uniformly sustained. A century ago, or even half a century ago, these same regulations probably would have been rejected as arbitrary and oppressive. Such regulations are sustained, under the complex conditions of our day, for reasons analogous to those which justify traffic regulations, which, before the advent of automobiles and rapid transit street railways, would have been condemned as fatally arbitrary and unreasonable.

In this modern law there is no inconsistency, for while the meaning of United States constitutional guaranties never varies, the scope of their application must expand or contract to meet the new and different conditions which are constantly coming within the field of their operation. In a changing world, it is impossible that it should be otherwise.

On the other hand, although a degree of elasticity is imparted by the Courts, not to the meaning, but to the application of United States constitutional principles, statutes and ordinances, yet if the rulings are found clearly *not* to conform to the Constitution the same are void.

For example, various Courts have held that the legal construction of ordinances dividing the city into districts, and limiting the use of real estate within such districts, is dependent upon whether the restriction is clearly arbitrary and unreasonable and has not any substantial relation to the public safety, health, morals, comfort, or general welfare. If so, the law or ruling is void because, under modern decisions, it violates the present broad interpretation of the United States Constitution.

However, it cannot be correctly stated that restriction of certain kinds of businesses or buildings from a specified section of a city is unreasonable, although the area as specified is relatively small.

For illustration, in State vs. City of Miami, 134 So. 541, a city enacted an ordinance which restricted operation of certain kinds of businesses within a small designated area. It was contended that the law was void because the area in which conduction of the stipulated businesses were restricted was so small as to result in the law being unreasonable. Nevertheless the higher Court held the law valid, and said:

"It is to be remembered that we are dealing with one of the most essential powers of government—one that is the least limitable. It may, indeed, seem harsh in its exercise, usually is on some individual, but the imperative necessity for its existence precludes any limitation upon it when not exerted arbitrarily. . . . There must be progress, and if in its march private interests are in the way, they must yield to the good of the community."

Building Restriction Ordinance Held Void

An important ruling of the law is that any ordinance which restricts the construction and repairs of buildings is void and unenforceable, if state or city officials are given unlimited and arbitrary authority to issue or refuse to issue a permit for the construction or repair work.

For instance, in Village of Durand vs. Love, 236 N. W. 855, it was disclosed that a city ordinance was enacted which made it unlawful to remove a wooden building from one location to another within the fire limits "without first having obtained from the chairman of the building committee of said Village a permit in writing so to do."

Legal controversy arose when the committee refused to issue a permit to a property owner who desired to move a wooden building.

It is interesting to observe that the higher Court held this law void, and said:

"No qualifications or standard of building proper to be removed nor conditions or restrictions on the discretion of the chairman to grant or deny such permits are provided. . . . It thus appears to have been the intention, as it is the obvious construction, that the authority attempted to be conferred on the chairman by section 8 was unlimited and arbitrary."

Another recent case involving this point of the law is Taylor vs. Moore, 154 Atl. 799. The facts of this case are that a city ordinance was passed which delegated power to public officials to grant or refuse to issue permits for erection of buildings, if in their opinion the buildings were fire hazards.

A property owner made an application to the zoning inspector for a permit to build a gasoline service station on his lot. It was refused. An appeal was taken to the board of adjustment and that board also refused to issue the permit.

The property owner appealed to the higher Court on the grounds that the ordinance is invalid because it actually delegates power to municipal officials to grant or refuse a permit. In holding the ordinance void, the Court said:

"Zoning ordinances must be uniform throughout the district. This is of great importance, as it affects not only the reasonableness but the validity of the ordinance. If the questions of zones and uses are to be determined by the zoning officers as each case is presented, gross discrimination may arise by which one class of citizens may be favored at the expense of another; when this appears, the zoning ordinance is ineffective. . . . Where a zoning ordinance permits officials to grant or refuse permits without the guidance of any standard, but according to their own ideas, it does not afford equal protection. It does not attempt to treat all persons or property alike as required by the Zoning Act."

Enforcement Delegated To Officials

Obviously, however, a zoning ordinance is not necessarily void simply because a certain degree of power is delegated to public officials. In fact, application and enforcement of any law must be delegated to officials and so long as such officials are not given arbitrary power, but are merely authorized to enforce the regulations, such ordinance is valid.

For example, in Taylor vs. Jacksonville, 133 So. 114, it was shown that a municipality enacted an ordinance and delegated authority to the building inspector to enforce the ordinance under rules and regulations of the city commission, and that the city commission shall hear and decide appeals and review any order, decision, requirement, or determination made by the inspector of buildings in the enforcement of zoning regulations.

It was contended by a property owner that this ordinance was void because it delegated arbitrary power to the officials. However, it is interesting to observe that the Court held the ordinance valid, and said:

"The Supreme Court of the United States early held that no fundamental or whole power could be delegated, but that the power to supply the details and apply the policy as expressed by the Legislature to changing factual conditions could be. . . . Here we have a case in which zoning regulations are required to be administered by the inspector of buildings under rules and regulations prescribed by the city commission which is also authorized to review the finding of the inspector of buildings. In other words, the city commission through the inspector of buildings is authorized to administer or apply the policy as expressed by the Legislature. This Court has repeatedly approved such procedure."

This Court decided another important point of the law and explained that an ordinance always is void if it deprives a property owner of *all* beneficial uses of his land. The Court said:

"It has been frequently held that, if the application of a zoning ordinance has the effect of completely depriving an owner of the beneficial use of his property, it would become the duty of the zoning board to relax its restrictions so as to prevent confiscation of a complainant's lands without compensation, otherwise the ordinance would be held bad."

Distinction Between Power To Make and Execute Law

As previously stated, while it is true that any law is void by the terms of which an individual or a group of individuals is given excess or arbitrary power, yet a law is valid by which a comission is given discretion to enforce certain regulations clearly defined by the law. So held a higher Court in the late case of Welton vs. Hamilton, 176 N. E. 333.

The facts of this case are that a state Legislature enacted a law which authorized municipalities to create boards and delegate power to them to enforce and execute municipal zoning ordinances. This law in part provides:

"All ordinances passed under the terms of this act shall be enforced by such officer of the city, village or incorporated town as may be designated by ordinance. The regulations by this act authorized, may provide that a board of appeals may determine and vary their application in harmony with their general purpose and intent and in accordance with general or specific rules therein contained."

The owner of a lot was refused a permit to construct a twenty-story apartment building. He appealed to the Court on the contention that the state law should be declared void because the board of appeals was given arbitrary power. However, since the law does not in effect grant power to the board to make regulations, but simply authorizes it to *enforce* the ordinance by granting or refusing permits in zones specified in the ordinance, the higher Court held the state law valid, and said:

"Any law which vests in the discretion of administrative officers the power to determine whether the law shall or shall not be enforced with reference to individuals in the same situation, without any rules or limitations for the exercise of such discretion, is unconstitutional. . . . The true distinction is between a delegation of power to make the law, which involves a discretion as to what the law shall be, and conferring an authority or discretion as to its execution, to be exercised under and in pursuance of the law. The first cannot be done; to the latter no objection can be made."

When License Law is Void

Various Courts have held that municipalities have no inherent or natural powers but derive *all* powers and authority from the state statutes, and that such statutes are to be strictly construed. In other words, any fair or reasonable doubt as to the existence of the power must be resolved against the municipality.

For illustration, in Crerar Company vs. City of Chicago, 173 N. E. 484, it was disclosed that a state law gives municipalities authority to pass laws to control, within their corporation limits, the location and regulate the use and construction of public garages, private

Firemen of Roanoke, Va., Aid Santa Claus

During a four-week period preceding Christmas, firemen of Roanoke, Va., repaired toys that were collected by the Boy Scouts. The rejuvenated toys were turned over to the welfare agencies in the city for distribution to the needy children. Paint and other supplies used were donated by local merchants.

garages and stables designed for the use of five or more vehicles. A city passed an ordinance, as follows:

"No person, firm or corporation shall manage, conduct, operate or carry on a private garage where said private garage is designed for the use of five or more automobiles, autocars, or any similar self-propelled vehicles without first having obtained a license therefor."

Controversy arose over validity of the law. During the trial the counsel for the city argued that the increased use of automobiles resulted in a situation, involving the public safety and welfare, which justifies the Court in holding that the regulation of private garages by municipalities is necessary. It was further argued that although the state laws do not specifically authorize municipalities to license private garages, yet such power is implied.

Ordinances Held Void by Higher Courts

However, since the state law does not specifically authorize cities to enact ordinances requiring payment of license fees by owners of private garages, the higher Court held the ordinance void, saying:

"Unless by the language of a given statute it can be seen that it contemplated a given future development, this Court can only ascribe to the Legislature the intention to meet conditions as they existed *at the time* of the passage of the act. . . . It seems apparent that if fire prevention or building ordinances or ordinances affecting gas storage are applicable, that fact does not change the issue before us in this case, which is, whether under the law appellee (city) is given power to regulate private garages by the ordinance under attack. We are of the opinion that the city does not have such power. Whether the increase of the use of motor vehicles has brought about a situation inimical to the public welfare unless regulated is a matter that might well be addressed to the Legislature. This Court cannot legislate."

Also, in the late case of Chicago vs. Schultz, 173 N. E. 276, it was disclosed that a municipal ordinance provides:

"It shall be unlawful for any person, firm or corporation, whether a licensed bill-poster or sign painter or not, to distribute, hand out or scatter upon any street, avenue, alley, sidewalk or other public place in the city of Chicago, any circular, dodger, handbills, pamphlet, card, picture, or any advertising matter of any kind whatsoever, or to distribute handbills or other advertising matter at houses, stores or places of business."

Therefore, the ordinance was directed against the distribution on the streets and sidewalks of advertising matter of any kind. Its provisions were so broad and inclusive that they prohibited any person from handing another person his card or picture on any street, sidewalk, or other public place in the city of Chicago. It was argued that this ordinance should be held valid because persons to whom paper advertising circulars are handed are likely to throw them on the streets thereby creating a fire hazard, as well as effecting an untidy appearance.

In holding the ordinance void, the higher Court said:

"There is no express grant of power to a city which enables it to pass an ordinance prohibiting a person from handing out a circular, card, picture, or advertising matter of any description whatsoever, in or upon its public streets or sidewalks. . . . The handing out on a public street, sidewalk, or public place of a 'circular, dodger, handbill, pamphlet, card, picture, or any advertising matter of any kind whatsoever,' is not, of itself, any offense. . . . It is true that if this ordinance is to be justified under the general powers granted to a municipality wherein the city is given power to regulate the use of its streets, the test of reasonableness must be applied. . . . The ordinance is not a reasonable exercise of its police powers. Its strict enforcement would unreasonably hamper persons in the conduct of their affairs."

Plant Owners Avoid Ordinance

It is well settled that a city ordinance restricting industries to zones is valid, unless clearly arbitrary, unreasonable, and having no substantial relation to public health, safety, morals, or general welfare.

For instance, in Oklahoma City vs. Dolese, 48 F. (2d) 734, it was shown that a city enacted an ordinance which declared industrial plants and their operation a public nuisance, and directed that they be abated within 120 days. The ordinance further specified that if the owners of the plants failed to discontinue their businesses the chief of the fire department, at the instance of the mayor, should abate and remove them.

The owners of the industrial plants appealed to the higher Court on the grounds that the ordinance was void and unenforceable for the reason that other firms engaged in the same and other businesses in similar locations in the city were not required to discontinue their business.

The owners introduced evidence proving that they were doing everything within their power to reduce the dust and noise necessary in the operation of their plants. Therefore, the higher Court held the law invalid and unenforceable, and said:

"Here were businesses that were persued in a zone allotted for them by the city. They are both useful and necessary in character, and vitally important to the development of the city. There are considerations which entitle a city to restrict industries to zones, and such action is valid unless it is clearly arbitrary and unreasonable and has no substantial relation to the public health, safety, morals or general welfare. . . . The community must abide the consequences necessarily incident to the businesses, for otherwise the companies would be deprived of the rightful enjoyment of their property. . . . The ordinance was also invalid in denying to the companies the equal protection of the law. There was manifestly an arbitrary and unreasonable discrimination as between these companies and others of the like kind surrounded by the same conditions in the locality. They were entitled to be treated by the same rule and could not be singled out for attack without some reasonable difference between them having a fair and substantial relation to the object sought to be attained."

Charlotte, N. C., Has Fire Patrol

Organization of a fire patrol of 10 men from the Fire Department to cover the congested building area of the city of Charlotte, N. C., inside the fire zone as an added protective measure against fires this winter was announced by the City Manager and has already become effective.

The fire patrol will be on duty from 8 p.m. until 4 a.m. each night and will patrol the area. The firemen will make inspections of all property paying particular attention to business establishments, and will make periodic checks of doors. "The beats" will be routed in such a way as not to interfere with police "'beats," the City Manager said, and made it clear the patrol of firemen will not be confined to protection of property.

Although the firemen will perform duties similar only in part to those performed by patroling policemen, they will co-operate with the Police Department. Where persons are found loitering in or around closed buildings they will order them away.

The patrol will consist of nine men under the command of an officer and one alternate who will report to substitute for any man who is unable to report on account of illness.

The hours have been so arranged as to give property owners the best possible protection. Fires in the business district, department records show, more often have started between 9 p.m. and 4 a.m. than in other hours.

D. G. Spencer, Jr.

INDEX TO VOLUME LXXXIV

The Index to Volume LXXXIV, covering the issues of FIRE ENGINEERING from January 1 to December 23, 1931, is now on the press and will be mailed to readers on request.

Fighting Chemical Fires

By LIONEL K. ARNOLD
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This is the third installment of a series of articles on this subject. Fire Engineering is indebted to the Official Publication of the Iowa State College of Agriculture and Mechanic Arts for the information of this series, which originally appeared in their Bulletin No. 9, engineering Extension Service.

FROM the standpoint of the chemicals involved warehouses present few special hazards. The exceptions are wholesale drug warehouses and chemical plants which have been previously discussed. In general almost any material or chemical may be found in a warehouse in large quantities which is carried in retail stores in smaller quantities. However insurance regulations are rapidly eliminating the unrestricted storage of hazardous materials in warehouses. Special vaults and underground storage are required for particularly dangerous or explosive materials.

Wholesale grocery warehouses may contain a few items which are somewhat of a chemical hazard, such as quantities of matches and bottled ammonia. Neither of these items, however, will materially affect the usual plan of operation at a warehouse fire.

In spite of the small chemical hazard involved, warehouse fires are hard to fight. Buildings are usually badly congested and floors heavily loaded. It is difficult to ventilate properly, hence there is good deal of smoke and heat to stand in getting at the seat of the fire. Water must be used in fighting a warehouse fire, but with judgment, for an excess of water can do tremendous damage to stocks.

Grain elevators are hazardous because of the possibility of dust explosions. Dangers to be guarded against by the fire department are: (1) further dust explosions; (2) excessive wetting of grain which will cause swelling; and (3) the presence of poisonous fumigating gases.

Fighting a grain elevator fire is rather difficult, as the grain handling section is generally open from ground to roof, and the entire structure may be quickly involved. Ventilation may not be advisable. Firemen should work fast and try to prevent the fire from spreading from the point of origin. Spray streams on burning material to avoid stirring up the dust. Such dust when mixed with the proper proportion of air is very explosive. Water should be kept out of the grain bins if possible. If the grain must be soaked, have the bin emptied before the grain becomes swollen. Ventilation should be utilized with judgment and caution.

Fig. 3—Cylinders of Acetylene and Oxygen Used for Welding

Hydrocyanic acid and chloropicrin are frequently used in vermin and insect eradication. Both are very deadly and firemen should take no chances where they are present. Fight the fire from the outside only.

Lumber Yard Fires

Many lumber yards carry a complete line of builders' supplies in addition to their stock of lumber. A few items such as quickline and cresoted posts are of significance from the standpoint of their chemical action.

Quicklime upon being wetted may generate enough heat to start a fire. Keep fire streams away if possible, or if water is necessary, use a sufficient quantity of it to dilute the lime or wash it out of the building.

Creosote makes a hot, quick fire; hence if possible, keep the fire from spreading to the stock of treated posts and supplies.

In general a lumber yard fire is just a big fire with few chemical hazards involved. Use water in quantity to cool below the point of combustion.

Plants concerned with the manufacture or repair of rubber articles incur certain hazards from fire. These hazards are: (1) the solvents, such as benzine, naphtha, and other petroleum derivatives, which are used in the manufacture of rubber and rubber cement; (2) varnishes used in finishing rubber articles; and (3) explosive fumes thrown off by inflammable volatiles.

A fire in such a plant should be ventilated thoroughly. Keep water out of any open vats which may contain inflammable substances.

Dry Cleaning Plant Fires

Fires in dry cleaning establishments are particularly hazardous because of the presence of flammable liquids and the possibility of encountering explosive vapor mixtures.

Fighting such a fire is complicated by the fact that some plants have steam or carbon dioxide smothering systems which must be considered. With systems of this type operating properly the rooms involved should be left closed. Fire streams can be utilized to cool outside exposures.

Where no steam or carbon dioxide smothering system is present, the plant should be ventilated quickly, and foam or other extinguishing agents used on the heart of the fire. Strong fire streams will be needed if the building is seriously involved.

Oil and Gasoline Storage Tank Fires

Several hazards are worthy of note in connection with fighting oil and gasoline storage fires: (1) There is always the possibility of an explosion from ignited vapors; (2) Tanks may boil over or rupture thus making possible the spread of fire to other tanks or the trapping of men working at the fire; (3) Pipe lines leading to the tanks may rupture with similar danger to nearby tanks and human life.

In attacking the fire utilize immediately any special extinguishing appliances available; such as foam apparatus, steam extinguishing apparatus, or carbon dioxide extinguisher equipment. Permanent installations of fire protective equipment are sometimes provided to work directly on the contents of the tanks. Where piping arrangements will permit, the oil should be drawn from burning tanks to others at unexposed positions.

Foam is the best all around extinguisher for oil and grease fires. Ordinary soda-acid extinguishers and water usually scatter the oil or hot grease and thus spread the fire. In fact it may be even dangerous to direct streams of water into tanks of burning oil as much of the water will be turned to steam and may cause the oil to "boil" over. Carbon dioxide is effective where it can be used. The new

loaded stream extinguishers are said to be very effective on oil and grease fires.

Water lines should be used to keep unaffected tanks and nearby exposures cool. Care must be taken not to direct strong streams on piping or tanks sides which have become heated; cold water may cause rupture. In cooling heated

Fig. 2—Fusible Plugs in an Acetylene Cylinder

The fusible plugs on the oxygen and similar cylinders are on the side of the valve opposite the discharge opening.

metal, water must be sprinkled on in such a manner that it will not result in chilling.

It is customary in fighting oil fires to cool storage tanks and barrels with a stream of water. This procedure is effective on tanks containing kerosene, lubricating oils and fuel oil since the cooling tends to keep the concentration of explosive vapors below the explosive limit. It is better not to cool gasoline tanks as cooling may cause sucking in of air which may reduce the concentration of vapor to within the explosive range. Heating may cause vent fires but these should be allowed to burn until all other fire is out since the vapor coming out from the tank may collect in pockets and explode.

Dikes around burning oil tanks are very important in case of overflow or rupture. See that existing dikes are intact, or if none are present, throw up temporary earthen dikes to protect adjacent exposures. Men must be alert at all times to escape in case burning oil is released by explosion or leakage.

Oil spreads rapidly on the surface of water, hence precautions must be taken to prevent burning oil from entering sewers, streams, or ponded water adjacent to combustible materials.

Gasoline tanks and barrels which contain no liquid gasoline are likely to present a greater explosion hazard than partly filled or full tanks or barrels since they usually contain an explosive mixture of gasoline and air.

Oil tank fires are difficult to handle. If foam is not available the most that can be done is to keep nearby tanks and exposures cool until the burning oil is consumed. Charged lines should be held in reserve to guard nearby property.

Dangerous Gases

Compressed Gases are distributed in steel cylinders ranging in size from the so-called "lecture bottles," 14 inches long by 2 inches in diameter, to the one-ton chlorine cylinders which are 80 inches long by 30 inches in diameter. The gases are under pressures up to 1600 pounds per square inch, many being liquids in the cylinders. All of the cylinders are equipped with one or more fusible safety plugs which melt at 150°C. for the purpose of liberating the gas before sufficient pressure is developed by the heat to cause an explosion. In a hot fire these safety openings are frequently too small to lower the pressure rapidly enough to prevent an explosion. When the plug melts out the gas is frequently discharged with great violence and may cause serious injury to the firemen if a poisonous or explosive gas. The construction of the safety plug and valve on one type of cylinder are shown in Fig. 2.

Common types of cylinders in use are shown in Figs. 3 and 4. Gases may also be shipped in special tank cars, stored in steel storage tanks, and distributed about buildings through pipes.

Most of the gases in use are either inflammable or poisonous or both, necessitating fire fighting measures suited to the invidual gas. There are some general precautions which can be observed when compressed gases are known to be involved. If the cylinders are located where there is a possibility of their being heated to 150°C. they should be removed first if possible. If it is known that cylinders of gases have been heated above this temperature, everyone should be kept back because of danger of explosion and of injury from escaping gas, precautions for the particular gas being taken. If the character of the gases is unknown both explosions and poisonous fumes should be watched out for. If the flammable gases issuing from a cylinder catch on fire they should be allowed to burn quietly in order to prevent the gas collecting in pockets and forming explosions later.

Non-Compressed Gases and Fumes

Many of the gases commonly sold in the compressed form in cylinders may be produced as the result of chemical processes and used directly without putting into the conventional containers. Other gases and fumes may be formed in the fire from liquids or solids. Chlorine is produced as one of the products of electrolysis of salt in the manufacture of caustic soda. Sulphur dioxide is produced in many plants for bleaching or other purposes by burning sulphur. Carbon monoxide is a constituent of city gas and producer gas. Acetylene may be produced from calcium carbide and water for use under low pressure or may be formed in a fire by water accidentally coming in contact with the calcium carbide. Hydrogen cyanide is frequently used in fumigating buildings and may be produced in the building as used.

Where poisonous gases are known or expected, the police should keep the crowds back as far as practicable and all

Fig. 4—Various Types of Gas Cylinders

Left to right: Acetylene, Carbon Dioxide, Oxygen (similar to cylinders used for Ammonia and Chlorine), Oxygen with protecting cap used in shipping, Acetylene.

firemen should have gas masks ready for immediate use. Gas masks are not effective, in general, for concentrations of poison gas greater than two per cent.

(To be continued)

The Volunteer Fire Department

By N. N. WOLPERT,
Assistant Editor, Fire Engineering

A Series of Articles on Volunteer Fire Department Administration and Operation

Fire Department Tools—Use of the Ladder

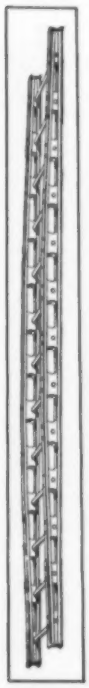
This article, the seventeenth of a series, deals chiefly with the forms of ladders that are found in Fire Departments and it describes some of the applications of ladders. Other appliances or tools are also described.

FIRE departments must have a good supply of ladders to carry out their programs of saving life and property in case of fire. Chiefly, ladders can be divided into two classes, the trussed ladder or the solid ladder which is also called the beam ladder.

With the exception of the sixteen-foot extension ladder which is commonly employed for inside work, extension ladders up to thirty-five feet in length are employed for the same purposes as the solid side single ladders of corresponding lengths.

Ladders from forty-five feet on up to fifty feet are used for reaching higher floors on buildings. Practically all solid side extension ladders over forty feet in length are provided poles or tormentors to reinforce the ladder and thus prevent too much of a sag and to give additional support at the center where it is most needed.

Single trussed ladders are made in sizes ranging from ten to sixty-five feet in length and the more commonly found lengths are ten, twenty, twenty-five, thirty, thirty-five, forty, forty-five, fifty, fifty-five, sixty and sixty-five. The ten-foot ladder is a general utility ladder and is employed inside of buildings as well as outside. It is useful for getting into cramped positions such as in back yards and other points where a short ladder is necessary.



Single Trussed Ladder

The uses of the longer ladders are practically the same as those of the non-trussed type. Trussed ladders, as compared to solid side ladders, are made in greater lengths. The longest single ladder is fifty feet.

The Trussed Ladder

Trussed ladders of the extension type are made from twelve to sixty-five feet in length, these being the lengths of the extended ladders.

The twelve-foot trussed extension ladder is usually made of two seven-foot sections; the sixteen-foot trussed extension ladder is usually made of two nine-foot sections, and the eighteen-foot trussed extension ladders are made of two twelve-foot sections.

The twelve and sixteen-foot trussed extension ladders are frequently used for inside work. One man can handle either of these ladders very readily and can extend the fly ladder with small ropes and then lock the movable section on desired rung. Because of its lightness and portability, it is very satisfactory for inside work and it may be used for climbing up through a hole to the floor above, for examining cock-lofts and attics beneath gabled roofs from the inside and for similar operations.

Hook ladders may be found in several different lengths although the more commonly employed are twelve, fourteen, sixteen and twenty feet long. One manufacturer furnishes any of his solid side ladders with hooks, if desired.

The roof or hook ladder has several advantages over the ladder without hooks in that it provides a substitute for the fire escape ladder reaching from the fire escape to the ground, from the fire escape to the roof or for any of the ladders on fire escapes which are missing from one landing to another.

In a residential section, this ladder is employed with good results in getting to the peaks of gabled roofs, to facilitate the removal of burnt shingles, for opening up shingle roofs, etc.

One type of hook ladder is provided with hooks which can be swung in between the beams when not in use so that the ladder may be used as a plain solid side ladder without hooks, if such a ladder is required.

Solid side or beam ladders are the easiest to build and are probably the most used of all types of ladders. They consist of the two beams with the rungs set in holes bored in the beams. They are heavier per unit of length than the trussed ladder and have not the rigidity nor the strength that the trussed ladders possess. They are, however, the most widely used ladders at present in the fire service.

A "Dog" Chain

Solid side ladders are built in many sizes ranging, in the majority of cases, in the following lengths: twelve, fourteen, eighteen, twenty, twenty-four, twenty-five, twenty-eight, thirty, thirty-two, thirty-three, and thirty-five feet in length. Solid side single ladders are rarely built in lengths greater than thirty-five feet.

Some of these ladders are built with spurs on both ends while others have the spurs on the butt end only. The function of the spur is to protect the end of the ladder and at the same time to make it possible to secure a better footing for the ladder, when in use.

Solid side ladders usually have approximately one rung per foot, and by checking the number of rungs, the length of the ladder is easily determined. For example, a 35-foot ladder will usually have 35 rungs.

It is a good practice to paint the rung of the ladder around which the roof rope is to be placed when the ladder is hoisted. Black or some other color paint may be used so that the task of tying the roof to the ladder may be speeded up. However, the ladder itself should never be painted. Ladders are given a good coat of clear varnish so that any split in the wood of the ladder may be readily detected and repairs made at once.

The use of shorter ladders, twelve, fourteen and sixteen feet is largely in connection with getting to the roofs of sheds, into the windows of second floors and for similar operations. The 16-foot ladder is commonly employed for reaching the first fire escape landing. Practically all of the single ladders are also employed for work on roofs of buildings in reaching windows of adjoining buildings.

When hoisting ladders by ropes to roofs of buildings, use the following rule:

For 10-foot, 15-foot and 20-foot ladders, to find the point at which the rope should be placed, divide by five and pass the rope through the rung of ladder at top and tie at the bottom.

For an example, where a 20-foot ladder is to be hoisted, dividing by five gives four. Pass the rope through the fourth and fifth rungs at the top of the ladder and tie two half hitches and a binder knot near the bottom rung of the ladder, and turn the ladder so as to have the ropes between the ladder and the building when hoisting and lowering the ladder.

For 25-, 30-, and 35-foot ladders, this rule is changed

somewhat. For this group, divide by five and multiply by two, then tie two half hitches on each beam of the ladder and make a bow line. Make all knots tight and have the bowline above where the hitches are tied. Put on a binding knot after the bowline has been tied, and also make sure that the knot is midway between the ladder and the building when hoisting or lowering the ladder. As an example of this rule, where a 35-foot ladder is used, dividing by five gives seven, which when multiplied by two gives fourteen. The two half hitches and bowline should be tied fourteen rungs from the top.

In climbing ladders of the truss type, the truss side is usually placed toward the wall, and the straight side outward. With some ladders, built exactly the same on both sides, with both beams and trusses identical, the ladders may be climbed on either side, with either side toward the building.

Pull Down Hook

Ladders must be inspected at frequent intervals as a safety measure for the men. The officer in charge should check for cracked or splintered beams and trusses, cracked or marred rungs, especially those to which the fly ladder has been locked. Splintered and worn poles, particularly at points where they are attached to the ladder, justify careful replacement. Other points to consider are spurs worn smooth from raising the ladder on pavements; halyards improperly adjusted for length, or else frayed, worn, cut or otherwise damaged; breaks, splits or weakening of the guides, braces or other wooden members; ends of stops worn, permitting the ends to pass; tie rods loosened or unbolted.

Before climbing a ladder, the butt must rest evenly, the poles must be properly set, the halyard secured, the ladder must be placed at the proper angle, the fly locked and the top extended into a window, over a wall or rest upon its objective. To secure the halyards, reach through the ladder between the first and second rungs, grasp the halyard and pull bight of same through the ladder. With this bight, take a turn around the second and third rungs. Place two half hitches around the standing part between the second and third rungs. Then push the end through the ladder and shift to the right or left against the beam of the ladder, depending upon which will interfere the least with climbing the ladder. The knot must be made snug but not too tight. Ladders should not be anchored to a window sill except in special instances where a narrow space compels placing a ladder almost vertical as it interferes with the shifting of ladders and slows up the placement of ladders.

Ladders Have Many Uses

Ladders are used for other things besides climbing. They are used as a battering ram, bracing pole extension ladders when for any reason, the poles cannot be used, as bridges across spaces. The bed and fly ladder of the 12-foot or 25-foot ladder can be takened apart and fastened into a step ladder by means of a ladder belt. A short ladder may be used in conjunction with a waterproof cover as an improvised stretcher.

Ladders have been used with good results as a means of carrying charged hose lines across busy streets without interfering with the flow of traffic. A single ladder is placed on each side of the road, possibly near the curb, and the ladders suitably braced. The hose is stretched to the top of one ladder, suspended overhead across the highway in the form of a suspension bridge cable, and then carried down to the street level by means of the other ladder.

Solid side ladders may weigh from four to six pounds per foot. A 35-foot ladder, example, weighs around 4.4 pounds per foot.

The weight of various sizes of trussed ladders are given in the following table. It should be remembered that these weights are for one particular make of ladder and would, therefore, not apply to all makes.

	Weight in Pounds
Ground Extension Ladders With Halyards	
55-foot ladder	290
45-foot ladder	250
35-foot ladder	175
25-foot ladder	85
Ground Extension Ladders Without Halyards	
18-foot ladder	85
12-foot ladder	45
Roof Ladders With Adjustable Hooks	
18-foot ladders	50
12-foot ladders	40

Truck companies carry some form of life net—either the Browder or the rope life net.

The Browder life net is made up of a metal ring to which is attached, by approximately two dozen springs, the landing mat. The circular metal ring is divided and hinged so that it may be folded into a semi-circle when carried on the side of the ladder truck. When placed in operation, the net is unfolded and locked in position by sliding ferrules which cover the hinged joints. Springs provide elasticity or "give" to the landing mat. In other words the landing mat is suspended in the center by a series of springs connecting it to the metal ring.

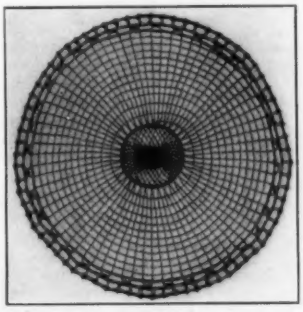
When the net is open, it has a diameter of about ten feet. In holding the net, the men stand erect with the left foot advanced and the net is held at the level of the neck, each man holds the metal ring with both hands, palms upward. It is necessary to hold the net at this height so that there will be no danger of a person when jumping, coming in contact with the ground due to the extension of the springs under tension. The landing net is made of canvas and is usually padded.

In using this or the rope life net, the person jumping should land in a sitting position in the net.

Men holding the net should always keep their eyes on the person jumping so that the net can be shifted quickly when necessary.

Rope Life Net

The rope life net is one foot less in diameter than the Browder type, that is nine feet in diameter. The rope net is made up of a heavy rope ring which is attached to the rope net proper by eighty-one springs to provide the "give" to the net. To the inner end of the springs is attached another large rope and the space within the inner rope is filled with woven rope of a smaller diameter. The center of the net is tightly woven and is about six feet in diameter. This net has the advantage over the Browder net in that it can be folded into a small space and placed in close quarters on a ladder truck or other piece of apparatus. On the other hand, there is always a possibility of its slackening when shifting to catch a person, and this disadvantage is thought by some to outweigh any advantage of compactness.



Rope Life Net

Numerous life belts have been placed on the market and the common types are described.

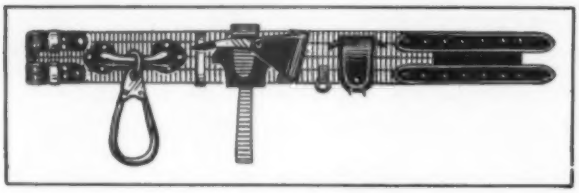
The chief function of the life belt is to assist in rescue work. For this reason the snap hook is made of greater strength than in the ladder belt, and instead of having a swivel connection to the belt, this snap hook is fastened with a ring. The belt may be made of either heavy fabric or leather. In either case, the straps are invariably made of leather.

The life belt is used in connection with ladder work where rescues are being made and for other forms of operation where a sturdy belt with strong hooks is necessary.

Another type of life belt is made with a small hatchet and pocket for carrying spikes, usually two of which are provided. The belt has provision for carrying a hatchet and a small pocket in which the spikes are usually carried. Spikes are, on the average, about three inches in length and are

employed in rescue work or for other operations such as attaching a life line to a roof, and so forth.

The Morrissey life belt employs a different type of hook. The rope is passed beneath a lever arrangement and then up around through the hook. Pressure on the lever produces a braking effect and slows down the rate of passage of rope through the hook. In this way when a rescue is being performed, the person sliding down the rope can regulate this speed with precision by manipulating this hand lever. It makes unnecessary the use of any other protection for holding the rope when a person is sliding down it, and the carrying of a second person to the street is simplified by means of the life belt.



One Form of Life Belt

The ladder belt does not differ very much from some types of life belts. Its chief difference is the manner in which the hook is fastened to the belt, and the lighter weight of the hook. The hook is attached by a swivel to the belt which makes it easy to attach the hook to the ladder rung in the case of ordinary Fire Department ladders.

The ladder belt is sometimes termed the Pompier belt as it is used in Pompier ladder work.

A "dog" chain consists of a piece of chain about two feet long, having at one end a pin bent at right angles, and at the other end a ring (snap hooks are sometimes attached to fasten the "dog" chain to fire escapes, etc.). The chain is placed around a beam of a ladder, brought under a rung, and the "dog" is brought back inside the beam and passed through the ring. The loop in the chain is drawn tightly around the beam and the dog is carried across and away from the ladder and driven securely into some firm place as a window sill or the roof, depending upon the length and the placement of the ladder.

Plaster Hook

A pull down hook is useful in cleaning debris after a fire. It consists of a heavy forged hook to which is attached a solid link chain with a forged ring at the end. The chain is usually eight feet long. In use the hook is attached to the object to be removed and a rope is tied in the ring on the end of the chain. A sufficient number of men are lined up along the rope, and at a command, all give a sudden tug to start the object. After an object has been loosened, it can be readily pulled out.

The plaster hook penetrates plaster and lath easily. It is useful in removing or securing openings in metal ceilings and for removing other obstructions so that the firemen can reach the seat of a fire.

The tool is made of tool steel and the spear head and the blade on each side have sharp knife edges. The blades close to permit entrance into the opening which one desires to make, and the blades open automatically when they have entered the opening. They carry away the obstruction upon being withdrawn. The blades automatically regain their original position by a spring contained within the tool.

Newly Elected Chiefs

The following have been elected to head the Fire Departments in their respective municipalities:

Rumson, N. J.—Harvey Tilton.
Oswego, Ore.—R. H. Cushman.
Molalla, Ore.—Fred Damm.
Wesleyville, Pa.—W. C. Gray.
Brookside, W. Va.—Theo. Ehni.
Wayzata, Minn.—W. T. Berry.
South Media, Pa.—George Mooney.
New Glarus, Wis.—Fred Ott
Mound, Minn.—William Krause.
Peekskill, N. Y.—Jas. J. McGuire.
Rising Sun, Pa.—Merton White.
Dickens, Ia.—Fred Goodge.
Ulen, Minn.—Arthur Tangen.
Dickinson, N. D.—H. J. Gruschus.
Heppner, Ore.—Mark Merrill.
New Eagle, Pa.—William Graham.
Malvern, Ia.—F. R. Chantry.
Ponchatoula, La.—Oscar Vittur.
Jefferson, La.—G. A. Blanke.
Calumet, Mich.—Jacob Kaiser.
Fair Lawn, N. J.—William Scharz.
Little Ferry, N. J.—Henry Franze.
Burbank, Cal.—Ben Patton.
Linthicum Heights, Md.—D. Evans.

Chiefs' Club Holds Ladies' Day

The annual Ladies' Day of the Fire Chiefs' Club of Massachusetts was held in the Salle Moderne of the Hotel Statler, Boston, on December 16 and was largely attended. The frivolities were preceded by a delicious luncheon.

At the head table were Chief Frank Tracy, of Woburn, President of the club, and Mrs. Tracy; Chief Selden R. Allen and Mrs. Allen, of Brookline; Chief David A. DeCourcey, Winchester; Chief and Mrs. Henry A. Fox, Boston; Chief and Mrs. William C. Shepard, Pittsfield, Mass.; Chief and Mrs. Arthur W. Spring, of Laconia, N. H.; and Ex-Chief F. Burt Jaquith, of Randolph, Mass., Secretary of the club.

Chief Allen, who is Second vice-president of the International Association of Fire Chiefs and a Past-President of the club, acted as master of ceremonies. There were gifts for all the ladies present and much merriment was furnished by a live turkey and a live pig which had to be captured by the ladies to whom they were awarded. The gifts were furnished through the courtesy of the associate members of the club. There was a dramatic reading by Miss Eleanor Sidley McBreen, of Watertown, and there were several vocal and instrumental selections.

A huge bouquet of flowers was presented to Mrs. Tracy, wife of Chief Tracy, President of the club; and a certificate of honorary membership was given to Rev. Norris T. Morton, chaplain of the Rhode Island Fire Chiefs' Club. A letter was read from Acting Chief Thomas F. Dougherty, of New York, expressing regret at his inability to be present.

The committee in charge of the arrangements was composed of Chief Allen, of Brookline; Chief Tierney, of Arlington, and John Campbell, of the Edison Electric Illuminating Company, of Boston. The reception committee included the above and also Ex-Chief John P. Crowe, of Westboro, Assistant State Fire Warden; Chief Charles L. McCarthy, of Worcester; Chief Frank Tracy, of Woburn; and Chief Charles H. French, of Manchester, N. H.

The live turkey was won by Mrs. L. C. Walden, wife of Superintendent Walden, of the Insurance Fire Patrol, of Worcester, Mass.; and the live pig was won by Mrs. Irving Patt, wife of Ex-Chief Patt, of Central Falls, R. I.

Chief Allen made the gift presentations of the large list of presents, all wrapped in mysterious looking boxes and packages, in his usual imitable style and a splendid time was nad by all those who attended the party.

HARRY BELKNAP.

William Striebel, Seagrave Road Engineer, Dead

William Striebel, who, since his retirement as Master Mechanic of the Milwaukee, Wis., Fire Department in August, 1930, has served as Road Engineer of the Seagrave Corporation, died early in the morning of January 1, 1932, after having failed to rally from an abdominal operation. Peritonitis developed, and Mr. Striebel died within a few hours after the operation. Mr. Striebel was fifty years old. He was born at Kiel, Wis., October 24, 1881.

He rose in the ranks of the Fire Department, starting in the early days of horse drawn equipment. He was the first Lieutenant in the first Motorized Flying Squad ever established in Milwaukee. Later he became master mechanic of the Fire Department and having served his full time was pensioned during the summer of 1930.

Funeral services were conducted from the J. H. Becker Funeral Chapel, Milwaukee, January 4, at 10:30 a.m. Interment was at Kiel, Wis.

THE COVER ILLUSTRATION

Smoke represents the visible part of incomplete combustion. Finely divided carbon particles that have not had a chance to become completely burned are carried upwards by the hot air currents. In warehouses where merchandise is stored close together and windows are frequently covered, there is little chance for air to enter in sufficient volume to carry on the complete process of combustion, and dense black clouds of smoke are the result. The photograph on the cover shows firemen of Jersey City, N. J., operating at a three-alarm fire which broke out in a furniture warehouse. It shows the importance of ventilating the premises before trying to gain entrance.

THE ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

PURCHASE OF APPARATUS DURING PERIOD OF DEPRESSION

SOME time ago, if a popular story is to be believed, a friend asked the late George Baker, financier, how to become rich. The sphinx of Wall Street said:

"Buy straw hats in the winter."

This is the "winter" season for the purchaser of Fire Department apparatus. Because of the increased desire to sell on the part of manufacturers in order to maintain factory organizations, and due to the lower prices of raw material, the asked figures for new apparatus has been most encouraging. Apparatus can be purchased today at prices far below the level of several years previous.

But apparatus should not be purchased alone because of the potential savings. Taxpayers should be made to realize that as far as the Fire Department is concerned, this is no time for retrenchment. On the other hand it is well to remember that there is a direct relation between the stability of business and the number of fires. In times like these, merchants and others are encouraged to "sell out" to insurance companies.

The problem in full that is treated in this issue appears in the box on this page. In the box on the following page is question that will be treated in the February issue. Should you have some comments that you would like to add to the next problem, you are invited to write to the "Round Table Editor," FIRE ENGINEERING, 24 W. 40th Street, New York, N. Y.

HERE IS THE PROBLEM

Do you believe that, due to the business depression, the purchase of fire apparatus should be speeded up? Why?

Do you believe that a crippled department would encourage the activities of the arsonist and would it result in heavier loss per fire?

Do you or do you not believe that this is a good time to strengthen the department? Why?

Discussion of the Problem

A very decided majority of the Fire Chiefs emphasize that now is the time to purchase fire apparatus and to strengthen the Fire Department. The replies received follow:

J. I. Fetters, Chief, Mishawaka, Ind.: I do believe that due to the business depression the purchase of fire apparatus should be speeded up. Whenever any evil threathens the lives or property of the public the protective equipment to combat the evil must be improved. Statistics show that in the past periods of depression, fire losses mounted in proportion to the degree of depression, and in order to successfully cope with the situation, fire fighting equipment and personnel must be raised to the highest possible efficiency.

The fact that a department is crippled and way below standard efficiency will become apparent to all after the first large fire, and the resultant large insurance payment will prove a temptation to many desperately struggling merchants and manufacturers. Without doubt, a crippled condition of the Fire Department in any community will result in a larger fire loss.

I certainly believe this is a good time to strengthen the Fire Department because the increasing fire losses make the need of improvement of fire equipment most essential. This is always the hardest point to prove when requesting the tax-paying citizens and city governments to provide additional equipment and men. We, in the fire service, who realize that "the best is none too good" for the protection of lives and property can, at this time, do much to bring this realization to the public.

W. R. Price, Chief, Springfield, Mo.: The purchase of fire apparatus should be speeded up at the present time as a business stimulant and to enable the Fire Department to combat the arsonist in a more competent manner.

A crippled department, I believe, will absolutely encourage the activities of the arson gangs, causing a heavier fire loss due to an inefficient department.

I think anytime is a good time to strengthen a department, the sooner the better. The present time is good on account of poor business, which is an encouragement to the "fire bug" who makes it extremely hazardous for the insurance companies.

J. D. Zimmerman, Chief, Lock Haven, Pa.: I believe the speeding up of the purchase of fire apparatus would stimulate business by increasing employment. I also believe that no community be it large or small can afford to economize in the one department which protect the life and property of that community, just because of a business depression.

To my mind an inadequate Fire Department would tend to encourage the arsonist, due to the fact that the thing he sets out to accomplish would more readily bring the results he is after—the heavier fire loss.

Without a doubt this is a good time to strengthen any Fire Department. Changing conditions have brought us face to face with changing needs. In other words what would suffice in 1832 will not meet conditions in 1932 so in order to keep the department abreast of the times it is always necessary to strengthen it to meet the hazards of the times.

Joseph E. Fifarek, Chief, Traverse City, Mich.: Building up the apparatus of a Fire Department during a time of depression depends almost entirely on the condition of that Fire Department. If the department is in a crippled condition, depression should not stop immediate purchase of apparatus. The reason for this is very apparent—people knowing that it would be quite possible for them to get away with arson, would cause even greater fire losses.

I think this would be an excellent and really very necessary time to strengthen the Fire Department. Owing to the additional losses caused by side issues of the depression, it is imperative that a department should not be allowed to run down. Additional strength is needed to cope with increased activity.

James C. Sullivan, Chief, Lowell, Mass.: If every Fire Department of any size would replace at least one piece of antiquated and unreliable apparatus each year, a

definite policy would be established and confidence restored.

The arsonist always sets fire for gain. Naturally the cripped Fire Department invites attempts at incendiarism.

It is good policy to keep a Fire Department manned with as much strength as finances will permit. I do not believe that a fire department which has not at least a reasonable amount of man-power, is for the best interests of the community which it protects. One bad fire will cause more hardship and privation than can be saved by such economies during a life-time.

Ben Bangerter, Chief, Mankato, Minn.: I do not believe that Fire Departments generally have been the object of extravagant expenditure of public funds. Therefore, any retrenchment to satisfy the popular demand for reduced taxation should be made effective in other branches of municipal government rather than those upon which the public safety depends, and necessary equipment and apparatus should be purchased as usual. The present depression no doubt has increased the moral hazard—a condition which cannot best be met with a crippled department.

A. E. Cooke, Chief, Pomona, Cal.: I believe that apparatus should be purchased, if the prices of said apparatus are such that you can economically purchase them; also to keep the men at work who have developed our present efficient apparatus, that they may continue to improve it. We certainly cannot afford to lose the knowledge and services of these engineers at this time.

All Fire Departments are more or less cripped from lack of men and equipment, from the largest to the volunteer, and if anyone thinks the arsonists are not busy during this depression, have them write the arson detail of any large Fire Department. We spend years training men for Fire Department work, and if you have to drop even one trained fireman it leaves a gap. In Fire Departments of thirty men or less the loss of one trained fireman would certainly result in heavier fire loss.

If the present depression continues we will have to strengthen both the fire and the police departments in order to cope with crime of all kinds. This is an opportune time to make improvements as it will help the unemployment situation as well as strengthen weak Fire Departments.

C. R. Summers, Chief, Norman, Okla.: Due to the depression and hard times, I think it advisable for cities to be as conservative as possible, for during these times the lowest tax rate on general government is none too low.

I believe that a crippled department would encourage fire activities of the arsonist and would result in greater losses. This is one of the hardest times that I can remember, but, however, we are having very few fires due to arsonists. As a matter of fact not as many as were expected. The reports of fire chiefs all over the country show that their loss is less this year than the past several years.

If you strengthen your department you are raising your tax rate. But on the other hand every department should have one man (paid) or call fireman to every one thousand population. A crippled department surely cannot keep down fire loss.

G. Rehm, Chief, Mobile, Ala.: When a Fire Department is in need of a piece of fire apparatus, I firmly believe in the necessity of purchasing it. I do not think this business depression should stand in the way of purchasing necessary equipment.

A crippled Fire Department is naturally bound to result in heavier losses and in the event of a department being undermanned or having a shortage of equipment, the arsonist will take advantage of this condition.

I do not believe in strengthening the department at this time. I believe in keeping all expenses as low as possible, on account of our city's financial condition.

C. E. Gillen, Chief, Racine, Wis.: I do believe that the purchase of fire apparatus should be speeded up at this time. Not alone because of the depression but also because of various plants not in operation which have cut their insurance and again those which are running slightly under a strain and who do not provide the necessary protection for fire.

I believe that a crippled department would encourage the activities of the arsonist thereby resulting in a heavier fire loss.

Anytime is a good time to strengthen a Fire Department, but particularly at this time because of the opportunity to employ a few more men, thereby giving to the community that added protection. It would also help the manufacturer and business man, and may result in a reduced insurance rate.

Michael P. Leonard, Chief, Erie, Pa.: Any city or borough contemplating the purchase of equipment should do so at once, when the necessary funds are appropriated. By doing so they assist in speeding up a return to normal conditions and help to relieve the unemployment situation by their action.

To weaken the department might encourage the arsonist. However, this class of citizens when ready to commit crime do not consider to any extent the weakness or strength of any department or the lives or suffering of others caused by their act.

I believe it to be the consensus of opinion of business men as well as chiefs that this is the logical time to purchase needed equipment. I would recommend purchase where the funds are available or taken care of in other ways.

C. E. Underwood, Chief, Manistique, Mich.: I believe that the purchase of fire apparatus should be speeded up during the business depression for the following reasons:

1st. There is more need of fire apparatus during any business depression than in good times.

2nd. Fire apparatus as well as other supplies are at a lower price now than in the past.

3rd. It is putting more public money in circulation.

Cutting down departments during the depression to save money is only encouraging the arsonist and certainly will result in heavier fire losses thereby raising the insurance rates and resulting in false economy.

I do believe that this is a good time to strengthen the departments in man power as it would give more men employment and you are also then better able to handle fires, resulting in a lower fire loss, which eventually will tend to lower fire insurance rates.

C. W. Kyle, Chief, Girard, Ohio: If the city is in need of fire apparatus and they have the money to spend now is the time as it would give work to the unemployed.

I do believe that a crippled department would encourage arsonists and cause more fires and a heavier loss.

If a city is having too many fires on account of arsonists I would say strengthen your department, if not I would say that you would be inviting trouble.

W. H. Mitchell, Chief, Saint Joseph, Mich.: Our fire loss has been gradually increasing from month to month and this year 1931 it will equal the three years preceding, combined. The number of suspicious fires is surprising, and the only answer is the fact that we are in a depression. To my mind the only solution is an increased effort on the part of the Fire Department.

D. J. Rayburn, Chief, Eldorado, Kan.: New equipment is always a means to lower insurance rates and added protection is necessary at a time when business conditions do not warrant business houses to keep enough help to properly care for their merchandise.

A crippled Fire Department is always an aid to the arsonist because he can prepare sets and touch them off successfully as the Fire Department is handicapped in not being able to send out enough men to make proper inspections.

Sufficient men in Fire Departments means proper inspections, full strength at fires, proper and efficient

HERE IS THE PROBLEM FOR THE NEXT ISSUE

What regulations have you for controlling dry cleaning in the home?

What program do you follow to educate women in the danger resulting from the use of gasoline or naphtha?

How has the State Fire Marshal cooperated with you in this respect?

movement of apparatus and equipment, and an even greater reduction in fire losses.

D. M. Hudson, Chief, Chelsea, Mass.: I do not believe that fire apparatus beyond that which is required to give the community adequate protection should be purchased under any conditions. There is no time of depression in the fire game, and the purchase of the department's equipment should not be affected by business conditions.

Adequate protection against fire ought to be provided whether the economic condition is favorable or unfavorable.

I do not think the arsonist considers the efficiency or inefficiency of the Fire Department. There are more cases of arson naturally in cities having strong fire departments than otherwise. If the heavy battalions would tend to lessen incendiary fires our big cities would be practically exempt from them.

I believe a department should be kept strong, consistent with its liabilities at all times. There should be an even balance between the protection afforded and existent hazards.

Forest Craig, Chief, Kokomo, Ind.: I believe the purchase of fire apparatus should be speeded up at this time, because most fire apparatus is down in price and the purchase of needed apparatus now will help stimulate business.

A crippled department, in my opinion, would encourage the activities of the arsonist, and I know it would result in heavier loss per fire.

If at all possible, now would be a good time to strengthen the department. The additional man power needed would help the unemployed situation. The purchase of small equipment to strengthen the department would also help the unemployed. So in my opinion we should build our departments up to the highest point of efficiency rather than think that due to the present business conditions we should let the department run down to a point where we would be crippled for both equipment and man power. The Fire Department is an emergency department, and is called upon to act promptly in any emergency. This we cannot do if our department is crippled for the lack of men and equipment.

T. H. Shipman, Chief, New London, Conn.: I hardly believe that the purchase of fire apparatus should be speeded up at this time due to the business depression.

Nearly every city is having its unemployment problems. The purchase of apparatus would not directly help the unemployed of the average city as much as other forms of city improvements, such as the erection of public buildings and road building and repairing. These improvements will also provide employment for skilled labor as well as laborers, and will also mean a more direct form of relief within the city itself. I do not think that any city should leave itself in a crippled condition, but should purchase what is necessary to maintain the efficiency of the department.

The average arsonist, in my opinion, does not give the condition of any particular Fire Department a second thought. They are far more interested in the efficiency of the fire marshal and the police department in their investigations and convictions of previous arson cases. If the fire marshal's division is active and well organized there are very few arson cases. As proof of this, I have known of cases where four or five fires in succession have been of incendiary origin, and if no action were taken to apprehend those responsible the fires would continue at frequent intervals. But once one of these arsonist is caught and convicted your troubles from this source are generally over for a period of years.

Without question the loss per fire would be greater with a crippled department, than it would be if the department were fully manned and equipped. I also believe that this is the time to strengthen the personnel of any department, not from a standpoint of an increased number of fires, but to provide employment for a number of men.

C. E. Carlson, Chief, Tacoma, Wash.: I believe this is a good time to purchase fire apparatus and other fire department supplies. It would provide the city with up-to-date apparatus and also help speed up business.

A crippled Fire Deparment would have the same effect on arsonists as a decreased police department to the potential criminal.

This is an excellent time to strengthen the department because the majority of departments needs strengthening. Now is the time to get first class men and more equipment.

D. E. Mahan, Chief, So. Amboy, N. J.: Because of business depressions a large insurance policy looks good to those without ethics. A crippled department certainly would encourage the professional arsonist with their convincing arguments, and surely would at any time result in a heavier loss than usual.

I believe this is the time to strengthen a department, especially now where when the apparatus is selling at a greatly reduced price. Prices now are much lower than they have been for about five years and with the return of prosperity the cost of Fire Department equipment will again increase.

Frank Clark, Chief, Belvidere, Ill.: I believe that fire apparatus should be purchased as needed. I do not believe the arsonist takes into consideration whether or not the Fire Department is in a crippled condition.

Any time, I believe, is a good time to strengthen the Fire Department, for it is my opinion that the majority of Fire Departments could employ a few more men.

D. J. Noonan, Chief, Vallejo, Cal.: By all means the purchase of fire apparatus should be speeded up. During these times cases of arson are more frequent, our past experience has shown this to be true.

I believe the department should be kept up to standard at all times, as municipalities suffer from depression as well as individuals do.

A. L. Lancaster, Chief, Wilson, N. C.: The purchase of apparatus should be speeded up where the towns and cities are financially able, because all apparatus is cheaper and there is so much risk of incendiary origin.

I do believe this is a good time to strengthen the department where the towns or cities are financially able, and especially by putting into service more firemen and patrol duty.

Harry McCullough, Chief, Arkansas City, Kans.: I believe during a business depression such as we are undergoing at the present time that the Fire Department should be equipped and fully manned. An efficient department at this time will aid in discouraging the arsonist. Now is a good time to place in service more men and equipment. It is well to have all questionable fires investigated, the moral effect of such investigations helps to discourage those who may have planned a fire in the future. Such investigations calls for an increase in personnel.

This city recently purchased new equipment to the amount of $25,000 and placed four more regular firemen on duty. We are making regular inspections of mercantile districts each month. Fire loss in this city for this year is now over $250,000.

W. A. Wantz, Chief, Anderson, Ind.: With so many men unemployed there might be an incentive to collect insurance. Our departments will need all the men and motor power that they can get during these times. For this reason I believe the purchase of motor apparatus should be speeded up.

There is a general trend in most cities to cut down expenses in every department and if we are able to maintain our present man power we will be satisfied. In view of the fact that quite a number of cities are undermanned they should try to strengthen their departments to take care of any emergency in their line.

E. A. McGranahan, Chief, Wheeling, W. Va.: Because of the fact that the community is liable to have more incendiary fires during the depression than if the times were good, I believe the purchase of apparatus should be speeded up.

I do believe that a crippled Fire Department would encourage the activities of the arsonist, and would consequently cause a heavier fire loss due to the fact that a good start would be made by the arsonist before proper investigation could be made.

This is a good time to strengthen the Fire Department as it would help to give men work and there would be a chance to get the better type of men.

Earl L. Kahley, Chief, Freeport, Ill.: I believe the purchase of fire apparatus should be speeded up if the city is financially fixed to do so, but at the present time most all cities are conserving wherever possible.

I think that a crippled department will have a tendency toward encouraging persons to set fire to places to collect the insurance.

This time or any other time is good to strengthen the department. It would give employment to men and also aid in making the department efficient—no matter what department is being considered they usually can use more men.

John Marks, Chief, Valparaiso, Ind.: The purchase of fire apparatus should be speeded up due to the fact that the "fire bugs" will be at work on account of hard times.

I believe that a crippled department would encourage the activities of arsonists, and would result ultimately in heavier loss by fire.

I think it would be the right time to strengthen any Fire Department. I believe that this year will bring more calls and a heavy fire loss because of the depression.

* * *

ANSWERS TO PREVIOUS QUESTION

The following replies have been received in answer to a previous question how the department copes with the problem of broken high tension wires on the fire grounds:

William H. Kenah, Chief, Elizabeth, N. J.: We notify the electric power company and request that power be shut-off at once when hampered by high tension wires.

When overhead wires are broken we place men at danger points with instructions to guard against possible fatalities.

I believe it is a good system to install fire gongs at power stations and have men from the station answer all alarms of fire in vicinities of high tension overhead wires.

Elmer Keith, Chief, Corsicana, Tex.: The Texas Power & Light Company answers alarms when they are called upon to do so in case of any trouble with high tension or broken wires. We are also fortunate enough to have the help of the gas company whenever necessary.

J. G. Sarran, Chief, San Antonio, Tex.: A lineman of the San Antonio Public Service Company answers all fire alarms and the first thing he does in case of fire is to cut the electric wires.

Frank M. Davis, Chief, Danville, Ill.: The city electricians and linemen of the Illinois Power & Light Corporation respond on call.

This department is equipped with rubber gloves, wire cutters and insulated tools but if it is a high tension wire or the voltage is not known I do not permit the men to cut it, otherwise the wire is cut at the poles.

The electric company gives us excellent cooperation.

Emil Goudreau, Chief, Kankakee, Ill.: The City Electrician, a man from the power house, answer all calls. They take care of any trouble we might encounter in the way of high tension wires or broken wires interfering with our progress.

Maurice J. Brun, Chief, Fort Smith, Ark.: When hindered by high tension wires at a fire we phone the power house and have electricity cut off in the vicinity of the fire.

When wires are broken overhead we cut the small voltage ones and if of high voltage, we have the power company lineman cut the wires.

I think the Power Company should have an experienced lineman to answer all first alarm fires in the commercial district and second alarm fires in residential districts.

H. L. Taylor, Chief, Rome, Ga.: We have a gong installed in the work shop of the power company and they are required by a city ordinance to answer every alarm with men and equipment to take care of any high tension wires that we may come in contact with. If I think it is dangerous, I keep the men away until the linemen have made it safe.

I believe that every city should have an ordinance requiring the power company to respond to every alarm of fire, with ample men and equipment to remove any dangerous high tension wires. The firemen have plenty to do with their own line of work and they should be protected by the Power Company. Our city has placed a penalty of $25 per each alarm that the power company fails to answer.

W. F. Morgan, Chief, So. Norfolk, Va.: We try to get clear of lines of high tension as far as it is possible so as not to form a wet connection from wires to the nozzle. When an overhead wire is broken we use a fire hook to pull it out of the way—back toward the nearest pole.

We try to have the fullest cooperation with the electric company by notifying them promptly on arriving at a fire and finding that their services are required.

H. E. Colby, Chief, Franklin, N. H.: We have never been troubled with high tension wires or broken ones. The Public Service Co. in our community is always on the job at fires.

Charles P. Loller, Chief, Hamden, Conn.: We have very few high tension wires in our district. When we do have breaks, the United Illuminating Company is called and they send men to take care of them at once. Their men are on duty day and night.

I. S. Zorb, Chief, Butler, Pa.: The Power Company sends a man to all fires and we carry his tools on the apparatus. He takes care of any broken wires, or high tension wires which hinder us. We believe this method to be very satisfactory.

Frank Zielsdorf, Chief, Wausau, Wis.: When hampered by high tension wires we call the power plant and they cut off the current until the fire is under control.

We have a lineman make all fire calls. He takes care of broken wires and safeguards the firemen while fighting fires.

Otto Geisler, Chief, Leavenworth, Kans.: The power company in our city has a man and a truck to respond to all fires (a standing order) so that in the event that we are troubled with high tension or broken wires, there is someone on the job to take care of them.

R. M. Milan, Chief, Huntsville, Ala.: When arriving at a fire and finding that I am hampered by wires, the wires are taken care of by a squad that follows us from the power office. In the case of the broken overhead wires, the sub-station is instructed to shut-off the current.

We have exceptionally good service—the Power Company is right with us at every big fire.

Joseph M. McKeon, Chief, Seneca Falls, N. Y.: When hampered by high tension wires, the firemen should keep away from the wires until the Power Company has cut off the current. The police should keep by-standers away from the danger.

Firemen should also keep away from overhead broken wires.

Effort should be made to have the Power Company cut-off the current immediately in such a case. I think it is a very wise plan for the Power Company to send a crew of two or three men to fires.

F. H. Grabner, Chief, Baker, Ore.: I am very glad to say that we have firemen in our department who are trouble shooters for the Light & Power Company, and there is always one of them at a fire. They take care of all electrical troubles, even cutting service wires from the building and saving the meters. We carry climbing hooks on the truck and insulated wire cutters.

R. S. Tait, Chief, Santa Cruz, Cal.: We have a number of call men who are linemen for the Light Company and they take care of all high tension wires, broken wires, etc. Several men in the department are paid part time by the electric company and it is their duty to save the company's property as well as help to put out the fire. Many gas and electric meters are saved by them.

Davis Chief of Anderson, S. C.

J. T. Davis has been appointed Chief of the Anderson, S. C., Fire Department to fill the vacancy caused by the death of the late Chief Foster McConnell.

Mr. Davis joined the Fire Department in November, 1914. In 1920 he was promoted to Assistant Chief when Tom Carter was Chief. He also served as Assistant Chief under Chief McConnell.

Chief J. T. Davis

Brown Elected Chief

The Firemen's Union of Reading, Pa., elected Harry J. Brown, Chief of the Fire Department to succeed Chief John G. Niethammer who retired January 1 after serving as Chief for sixteen years.

Chief Brown as head of the volunteer firemen's organization will receive a salary of $2,400 a year and the city will supply him with an automobile for official Fire Department business. He is a member of the Junior Fire Company and there was open house at this station until a very late hour, after the election result was announced.

Questions and Answers

NOTE—Readers are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified

Three Engines Needed

To the Editor:

Kindly explain how a pumper could develop a nozzle pressure of 120 lbs. through three 1,100 foot lines of either 2½ or 3" hose siamesed to a 1¾" tip.

Kindly give the figures in your explanations.

G. R.

Answer: Three-inch hose should be used in the layout suggested.

The method of solving for engine pressure is as follows:

First reduce the three 3-inch lines of hose to a single 2½" line. This is done by dividing by the factor, 20.4.

1,100 divided by 20.4 = 53.92 feet of 2½" hose. In other words, the three parallel lines of 3" hose, each one thousand one hundred feet long, are equivalent to a single line of 2½" hose 53.92 feet in length, from a friction standpoint.

Then employ formula for solving for engine pressure.

E.P. = N.P. × (1.1 + K.L.)

K for 2½" hose and 1¾" nozzle is .907.

L, the number of 50 foot lengths of hose in the line is equal to 53.92 divided by 50, or 1.0784.

Then engine pressure = 120 × (1.1 + .907 × 1.0784)
= 120 × (1.1 + .9881)
= 120 × 2.0881
= 250.57 pounds or 250 pounds approximately.

This is the pressure at which the engine will have to operate to deliver a stream at a nozzle pressure of 120 pounds.

The discharge from a 1¾" nozzle at one hundred twenty pounds nozzle pressure is 996 gallons per minute.

A pumper in good condition is expected to deliver ⅓ of its rated capacity at 250 pounds pressure.

Thus, if the pumper operating at ⅓ of its rated capacity, must deliver 996 gallons per minute, it will require a pumping capacity of 3 times this amount at 120 pounds engine pressure, or the total engine capacity at 120 pounds will be 3 x 996, or 2,988 gallons per minute or 3,000 gallons per minute approximately.

It will therefore require 3 one thousand gallon pumpers to supply the 1¾" nozzle at 120 pounds pressure, pumping through three 3-inch lines of hose 1,100 feet long.

Size of Sprinkler Tanks, Etc.

To the Editor:

I would appreciate your assistance in answering the following questions:

Question 1. What determines the size of a tank for a sprinkler system? What is the average flow of water through a sprinkler head?

Question 2. Inspect a theatre in regard to fire hazards. Inspect a theatre with moving pictures in regard to fire hazards, giving details of each inspection.

Question 3. What are the means used to get a stream on a fire, where a 2-inch tip is employed? What are the hindrances in using this stream, and what are the means employed to overcome the same?

Question 4. How would you extinguish a coal pocket fire? What special tools and appliances would you use?

Question 5. What instructions would you give a new recruit in the following (A) Pipes and nozzles; (B) Entering buildings charged with smoke; (C) Siamesed lines of hose; (D) Handling roof lines?

J. D.

Answer 1. Where there is only one building to be supplied, the usual method for determining the proper size of tank to furnish water to sprinkler heads is as follows: figure the amount of water needed to supply one quarter of the sprinklers on a floor for twenty minutes. This amounts to practically the same thing as taking 100 times the number of heads on a floor, assuming an average elevation of 25 feet for the water in the tank above the sprinklers. Thus, if there are 150 heads on the floor, a 15,000 gallon tank should be used. If the other supply is exceptionally good, a somewhat smaller tank might be used, but if the other supply is weak or if there is not another supply, a much larger tank would be desirable.

In hazardous risks where quick flash fires opening many heads are liable to occur, larger tanks are also desirable.

As a general rule a capacity of a gravity tank for sprinkler systems should never be less than five thousand gallons and preferably not less than 10,000 gallons capacity.

The average flow from a sprinkler head at different pressures is as follows:

Pressure at sprinkler, pounds	Water discharged, gallons
5	15
10	19
15	24
20	28
25	31

Answer 2. In making an inspection of a theatre the following points should be observed: that doors open freely outward, that no obstructions are placed in aisles, or in stairways or the approach to aisles of the various exits. Observe whether or not illuminated exit signs are in condition, also inspect standpipes, valves, hose and nozzles to see that they are in condition and available for instant operation. That extinguishers are properly charged and that nozzles thereon are not plugged. That fire alarm boxes (if such are provided) are available and not obstructed from view. That fire curtain is in condition and readily operated. That sprinkler valves are not closed. That fire buckets and other fire prevention appliances are ready for use. That there is no rubbish under stage or in dressing rooms. That the "no smoking" ordinances is properly enforced. That skylights over stage are operable. That housekeeping throughout the theatre is carefully maintained.

In addition to the above, where motion pictures are employed, inspection should include motion picture equipment. See that booth is properly constructed and the equipment therein is properly maintained; that films are stored in accordance with Fire Department requirements; that electric wires are safe; also that projection booth in no manner interferes with the prompt and safe egress from the building.

Answer 3. First, a good supply of water at a good pressure; siamese lines or parallel lines to the equipment, fitted with the 2-inch nozzle; proper means of manipulating the heavy streams, which would include pipe holder, deluge set, deck gun and water tower equipment.

The chief hindrances in using a 2-inch stream are: difficulty in directing it; difficulty in getting the stream to a point where it will operate effectively.

The use of heavy stream controlling apparatus, such as pipe holders, deck guns, etc., remedies the first problem; the use of water towers to a large extent remedies the second situation, particularly where the fire is burning on the floors within reach of the tower either extended or telescoped.

Answer 4. Coal pockets fall into two general classifications, concrete and plank construction.

The concrete pocket offers a simpler problem insofar as fire fighting is concerned, so that the methods of handling a fire in a wooden pocket will be described.

If the fire has gained much headway, collapse of the pocket may be expected. If it is a multiple pocket and if the fire is confined to one section, then the best thing to do is to make an attempt to drench this particular section. All operations must be from the top of the pocket, for there is no effective means of operating on the fire other than throwing water on the top of the coal and letting it drain through. The fire in the woodwork of the coal pocket, particularly where fire has broken through, should be handled in the same manner as any other structure, the structure being washed over quickly with good sized streams.

Once the structure has been wet down, lines may be

gotten into operation by means of ladders or other available paths to the interior of the coal pocket. Large quantities of water will be required. A tremendous amount of heat will be created by the burning of the coal, and in order to cool off the burning materials to a point below their re-ignition point, it will require considerable water.

When directing streams, particularly in the early stages of the fire, care should be observed not to displace the quantities of dust which may be found lodged on ledges of the pocket. Explosions have occurred due to coal dust in air, which will ignite when coming in contact with the open fire.

Once the bulk of the fire has been brought under control, the wetting down operations will depend entirely upon the quantity of coal present, and upon the condition of the pocket. Usually the coal can be throughly drenched from the top. However, if the water does not seem to reach the fire burning in the lower portions of the coal, it may be necessary to open the hoppers so that the coal at the bottom can be brought out where it can be struck with streams.

Precautions should be observed by the officer in command to protect the men against injury in case pocket collapses. The fire will weaken the structural members of the pocket and the additional weight within the pocket due to the discharge of large quantities of water therein may so overload the pocket as to cause it to burst, spreading coal and possibly fire in all directions. If there is an indication of the pocket giving away, lines should be in readiness to cover exposed structures in the immediate neighborhood.

As noted above, large streams will be required. A water tower, if immediately available, may prove valuable in getting the streams in the early stages of the fire into the burning pocket.

Special appliances required in operating at the coal pocket fire including large nozzles, nozzle holders, axes, ladders. Water tower and deck guns may also be brought into play in some instances.

Answer 5. (A) Size of pipes and nozzles used on different occasions; methods of operating shut-off, or controlling, nozzles; methods of employing large nozzles with holders; methods of determining proper size of pipes or nozzles for different layouts of hose; desirable pressures on different sizes of pipe and nozzles for different ranges; necessary water supply and pressure to provide satisfactory streams with different size pipes and nozzles.

(B) Methods of effecting entrance; methods of proceeding through smoky buildings to seat of fire, including precautions to safeguard against accident and to insure safety exit in case of emergency; principles of ventilation; causes and dangers of back draughts.

(C) Purpose of siamesing lines of hose; advantages secured thereby; layout necessary for handling large size nozzles; determining necessary pressures on lines which are to be siamesed into single lines or to single pipe.

(D) Methods of getting roof lines to roof; precautions, to prevent accidents, such as securing lines where high pressures are to be employed, or where roof is slippery; use of hose on roof and necessary precautions to eliminate accident; determining of pressures necessary at engine or hydrant to produce satisfactory pressures on nozzles attached to roof lines.

Velocity of Flow, Etc.

To the Editor:

I would be grateful if you would answer the following questions.

(1). If two 2½" lines are siamesed into one 3½" line the velocity of flow in the latter is much greater than in the former. (Answer "true" or "false.") Also give method arriving at this answer.

(2). It is safe to use water freely, both near a leak in an ammonia pipe and near a leak in a gas pipe. (Answer "true" or "false.") B. R.

Answer: The first question should be answered "False." The second question should be answered "True."

In explanation of question one, the cross section area of two 2½" lines is almost identical with that of one 3½" line. There is about 2% difference in area, in favor of the two 2½" lines.

The velocity of flow multiplied by the cross section area of the carrier gives the discharge. As the two areas are almost the same, the velocity of the flow in the two layouts will be almost the same. Hence the question should be answered "false."

With reference to the second answer, water absorbs ammonia and certain other gases to a considerable degree, and thus aids in reducing hazards incidental to leakage of these gases. It also cools the containers or carriers of the gases and thus reduces the pressure, slowing down the rate of leakage.

Drafting Water

To the Editor:

"A." claims that a pumping engine that could not be driven close enough to the shores of a river or lake to reach water with two lengths of suction could have three or four extra ones added and yet draft water. In this case the drop would not be over 10 feet and that would be a gradual grade.

"B." claims that this could not be done as the body of water would not hold together, that is, the pump could not produce suction enough to draw the water that distance even if it were almost level. Of course we will assume that all couplings are tight and pump is of ordinary type and in fairly good condition.

Who is right?

W. F. E.

Answer: "A" is right. Three or four extra lengths of suction hose can be used in drafting water, as long as the lift remains less than 25 feet. As a matter of fact, 25 feet is the maximum which water can be lifted by the average fire engine—20 feet or less would be better. In the event that several lengths of suction are used, particularly care must be taken to see that they are air-tight. Otherwise, it will be impossible for the engine to take suction. The longer the length of the suction line used, the longer it will take to exhaust the air and draw water up to the engine. But any fire engine which can create a partial vacuum can exhaust the air, and if fairly tight, it can draw water up to reasonable elevations.

Painting Fire Hydrants

To the Editor:

Our association has passed a resolution asking a change in the color of paint on our fire hydrants and I would appreciate your help in obtaining the proper color to use

At the present time our hydrants are painted black with white tops and we have decided that yellow or orange is more plainly seen at night; however, we are undecided on the correct shade of yellow to use.

I would appreciate any assistance that you can give us in this connection.

A. H. M.

Answer: We have communicated with some of our readers and their comments below may answer your question:

"We paint our hydrants every summer, using a highly visable yellow enamel, furnished by the Tropical Paint Company of Cleveland, Ohio."—Chief Geo. Van Zant, New Castle, Ind.

"In painting fire hydrants we use a standard brand of hydrant yellow which can be purchased from any reliable paint manufacturer. Inasmuch as we have not tried to mix our own paint, we find the Hydrant Yellow paint (ready mix) satisfactory for one year."—Chief Thos. H. Shipman, New London, Conn.

"In answer to your recent question, I have secured the following information from Mr. J. E. Gibson, Manager and Engineer of the Water Department:

"Yellow Fire Hydrant Paint

Grind (in a water cooled Burh Mill)
85 lbs. Chemically pure Chrome Yellow
10 lbs. Magnesium Silicate
2 Gals. Gum Grinding Japan
2 Gals. Raw Linseed Oil

"Reduce the above paste with 15⅝ gals. of enamel mixing varnish. The above formula produces approximately 22 gallons of paint ready for use. If a sample is desired, it can be secured from the Leland Moore Paint & Oil Company of Charleston, S. C."—Chief L. Behrens, Charleston, S. C.

TWO CHEMICAL WAREHOUSES DESTROYED IN JACKSONVILLE

Captain and Three Firemen Seriously Injured—Chemical Dust From Fire Removed Paint From Automobiles on Highways

By D. G. Aid

Lieutenant, Jacksonville, Fla., Fire Department

A FIRE captain and three firemen were seriously injured and a score others received minor injuries as two large warehouses located on the downtown waterfront of Jacksonville, Fla., filled with twelve hundred tons of nitrate soda, potash, and sulphates, burned on the night of December 5.

Fire was discovered by a watchman who sounded the first alarm over the A. D. T. alarm system and the alarm was received at fire headquarters simultaneously with a box call at 8:24 p.m. The first alarm assignment consisted of engines 1-4-5; trucks 1 and 2; high pressure No. 2 and the fire boat, John B. Callahan, in command of Chief H. R. MacMillan and Assistant Chief J. B. Chancey of the Western Division. Upon the arrival of Chief MacMillan, he found that the fire had gained such headway that he immediately ordered a third-alarm transmitted. This brought engine companies 2-3-7-8; truck company No. 4 and high pressure company No. 1 in command of Deputy Chief W. Q. Dowling. At this time a series of explosions began to occur within the building and the fire assumed a conflagration proportion, endangering many buildings adjacent to the warehouse. Chief MacMillan ordered a fourth-alarm transmitted. This brought engine companies 6 and 9.

The explosions were continuous and lasted nearly three hours, during which time many plate glass windows were shattered within a radius of several blocks. Timbers, boards, warped pieces of tin roofing, and other debris hurled high into the air, endangered the lives of the men operating against the flames. One of these boards hit Captain J. F. Acosta of Engine Co. No. 3 in the back, throwing him in the path of a high pressure stream which hit him in the head, knocking him to the ground. He was rushed to the hospital in an unconscious condition. Examination there revealed a burst ear drum and a broken pelvis. Another descending missile hit a fireman. He suffered a slight concussion.

The chemicals in the air settled on thousands of automobiles hurrying towards the fire and ate the paint down to the metal. Damage to the warehouses and their contents exceed $500,000 while damage to plate glass windows and paint on automobiles will run the loss covered by insurance to nearly another $100,000.

While thousands of spectators looked on, the firemen, under able direction of Chief MacMillan, fought the fire with aggressiveness and vigor. The fire boat, John B. Callahan, did yeoman service in battling the flames, cutting the spread of the fire from the river end of the warehouses where it would have been impossible for land companies to operate against the flames.

The departmental operation at this fire was as follows:

Seventy-seven officers and men operated nine engine companies, three ladder trucks, two high pressure companies and the fire boat; 10,600 feet of 2½-inch hose and 3,100 feet of 3-inch hose were used. Fifty-one feet of ladders were used. Nine engines connected to as many hydrants supplied 18 streams with an average pressure of 260 lbs. Nozzle tips ranging in size from one to one and a quarter inch were employed, while the three mast nozzles, the fire boat s main battery, were two-inch.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designating in the headings. These figures, compiled from telegraphic reports are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands of dollars.

Week ending December 24	Loss in Thousands of Dollars
WARRENVILLE, ILL.—A. C. Hoy bldg. destroyed	80
OYSTER BAY, N. Y.—Lyric Theatre, owned by E. K. Hutchinson.	35
WILLIAMSPORT, PA.—Plant of Williamsport Machine Co.	45
LONOKE, ARK.—Public school destroyed	25
FRAMINGTON CENTRE, MASS.—Property on estate of E. W. Anthony	80
STANDARDSVILLE, VA.—Bank of Greene Co., adj. property	45
EASTPORT, ME.—Plant of MacNichol Packing Co. destroyed	150
CLINTONVILLE, PA.—Blair hwd. store, garage, adj. dwelling	25
VINELAND, N. J.—First Methodist Church destroyed	125
AUBURN, N. Y.—Hislop dept. store, adj. property	400
GRAND JUNCTION, COLO.—Property of D. & R. G. W. railroad.	65
CHICAGO, ILL.—Windmiller's dept. store damaged	80
LAKE CHARLES, LA.—Warehouse of Niblett Farms, Inc.	75
SALAMANCA, N. Y.—Plant of Steamburg Dairy Products Corp.	80
WILMINGTON, N. C.—Two business buildings destroyed	125
CHEROKEE, OKLA.—Plant of Cherokee Milling Co. Destroyed	200
NEWPORT NEWS, VA.—Liner "Segovia" of United Mail Steamship Co.	2,500
WELLESLEY, MASS.—Residence of E. T. Ramsdell damaged	25
WHATELY, MASS.—Barn on Joseph Sakowicz farm	25
HASKELL, TEX.—Robertson store, adj. property	35
LEECHBURG, PA.—Two shops of West Leechburg Steel Co.	40
OLEAN, N. Y.—Wax Works at refinery of Vacuum Oil Co.	70
PETERBOROUGH, N. H.—Grain mill of Goodnow & Derby, adj. garage	25
OMAHA, NEB.—Plant of Nebraska Consolidated Mills	150
LOOKOUT, KY.—Post office and Ratliff store destroyed	35
ATLANTA, GA.—Barracks at Fort McPherson destroyed	80
FALL RIVER MILLS, CALIF.—Store of Robert Summers & Co.	25
SHENANDOAH, PA.—Barn on Jacob Stankiewicz farm	25
BRIDGETOWN, N. S.—Shaffner Block, owned by C. L. Piggott, damaged	30
ORRVILLE, ALA.—High school destroyed	42
KAUKAUNA, WIS.—Farm bldgs. of Lee Onkels destroyed	25
CHRISTIANSBURG, VA.—Evans & Flannagan furniture store	25
UNION CITY, IND.—Johnston Case Goods Co. damaged	50
CARTHAGE, MO.—Standard Machine Mfg. Co. damaged	25
Week Ending December 31	
GOULD, ARK.—M. Cook and B. E. Webb stores	35
ONEIDA, N. Y.—Dept. store of J. E. Stone & Co.	80
DANIELSON, CONN.—State Armory destroyed	35
BECKLEY, W. VA.—Three department stores destroyed	150
SCRANTON, PA.—Bldg. occupied by Fairmount Restaurant	25
LONGUEIL, QUE.—Leduc garage destroyed	80

Two Views of the Waterfront Fire That Destroyed Warehouses Containing 1,200 Tons of Soda, Potash and Sulphates

HENDERSON, N. C.—Whse. of Planters Tobacco Co. destroyed... 25
MT. VERNON, WASH.—Montgomery Ward store damaged..... 50
SWIFT CURRENT, SASK.—Empress Hotel destroyed..... 80
WELLAND, ONT.—Dredge owned by Porter Bros..... 80
ALTOONA, PA.—Pennsylvania R. R. shops, damaged..... 1,500
TOLEDO, OHIO—Warehouse of Lakeside Biscuit Co. destroyed.... 40
VALPARISO, IND.—Bldg. occupied by Spiro's fruit store..... 45
PENINSULA, OHIO—Mill of Moody & Thomas Co. destroyed.... 80
ATLAS, PA.—Hotel and several residences destroyed..... 45
NEW GLASGOW, N. S.—Several business establishments..... 100
OTTAWA, ONT.—Building of Rideau Aquatic Club..... 25
MIDLANDVALE, ALTA.—Property of Western Gem Coal Co..... 25
BRIDGEPORT, ALA.—Hudson building destroyed..... 35
NORWALK, CAL.—J. C. Penney Co. store destroyed..... 45
HAYTI, MO.—Keystone building damaged..... 30
CHASE CITY, VA.—A. O. Bernie's residence destroyed..... 25
WILMERDING, PA.—Business and residential property, Watkins Ave..... 25
WOODSIDE, CAL.—Property on estate of August Schiller..... 35
LOS ALTOS, CAL.—Country home of P. H. McCarthy..... 80
SPRINGFIELD, MASS.—New Court Hotel damaged..... 75

Week Ending January 8

EL CENTRO, CALIF.—Davis building block destroyed..... 80
SHARON, MASS.—Sunset Lodge Inn destroyed..... 80
CHESTERTOWN, MD.—Plant of Fairlee Cooperative Canning Co.. 25
LEBANNON, N. H.—Property occupied by Richardson & Langlois Co..... 125
MIDDLETOWN, N. Y.—Shops of Ontario & Western R. R..... 250
MINEOLA, TEX.—Beckham Hotel destroyed..... 35
LOWELL, MASS.—Storage houses of Daniel Gage Ice Co..... 125
VICTORIA, B. C.—Branksea apartment building destroyed..... 25
PHOENIX, ARIZ.—Barrows furniture store destroyed..... 125
NORWOOD, MASS.—Murphy block damaged 25
BIEBER, CAL.—Business block destroyed..... 25
BOSTON, MASS.—Odd Fellows building destroyed..... 125
MARQUETTE, MICH.—Garage, tire and repair shop destroyed..... 80
GRAND RAPIDS, MICH.—Plant of Rose Patch & Label Co..... 35
ONSET, MASS.—Imperial Inn at Point Independence..... 25
MIDLANDVALE, B. C.—Property of Western Gem Coal Co..... 25
SASKATOON, SASK.—Cafe and Charmbury studio damaged..... 45
COLDWATER, MICH.—Property of Martin Vanaken estate..... 25
FRESNO, CAL.—Paradise Ballroom, Blackstone Ave..... 45
CHICAGO, ILL.—Citro's Cafe, 1012 So. Halsted St..... 45
ENGLISH, IND.—Business and residential property..... 50
BANGOR, ME.—Frame business property on Hammond St..... 25
ST. LOUIS, MO.—Fruit supply warehouse, No. Fourth St..... 25
ALBION, N. Y.—Garage of Snider Packing Corp. destroyed..... 25
WILKES-BARRE, PA.—Business property owned by J. K. Weitzenkorn 80
LUCERNE, QUE.—Log Chateau destroyed..... 400
NEW GLASGOW, N. S.—Plant of Eastern Bakeries, Ltd..... 50

In the November 25, 1931 issue of Fire Engineering, under "Whats Burning," appeared two items which were incorrectly reported. The Wolf Bakery and adjoining property loss at San Antonio, Tex., reported as $35,000, was but $6,016. The second, also listed under San Antonio, contained the loss sustained by the plant of the San Antonio Boot Company. As this latter property is two miles beyond the city limits, this loss cannot be credited to San Antonio.

Under Rochester, Minn., in the issue of December 9, 1931, (Woolworth store and 6 adjacent buildings) fire was confined to the basement of Woolworth store, the loss amounting to about $30,000, instead of $70,000.

Boston Has Smoky 3-Alarm Fire

The Boston Fire Department fought a stubborn blaze in a one story block of stores on Blue Hill Avenue at Mattapan Square in the early hours of Monday, November 23.

Chief Fox and Commissioner McLaughlin at the Mattapan Square Fire

The first alarm was received at 4:39 a.m. This was followed by a second at 4:43 and a third at 4:48. The fire was a very smoky one and difficult to get at as the basements were piled high with goods and the wooden partitions between the various stores made it easy for the flames to travel the length of the block.

Chief Henry A. Fox and Deputy Chief Frank Sweeney directed department operations. Many lines of hose were laid and the fire was attacked both front and rear. Cellar pipes were utilized to advantage.

Seven stores were burned out including those occupied by the Great Atlantic and Pacific Tea Company, the F. W. Woolworth Store, the United Cigar Stores Company, the W. T. Grant Company, a shoe store, the Reliable Hardware Company, and a clothing store.

Portable search-lights from the lighting plants of the Boston Fire Department were used to facilitate operations. The streams were supplied by American-LaFrance pumpers connected to post hydrants; 2½ and 3-inch hose were used.

The "all out" signal was not given until 10 a.m. The total damage to the stores and contents was estimated at $100,000.

BOYS' SCHOOL IN NEWTON, MASS., RAZED WHEN WATER SUPPLY FAILS

Firemen Also Hampered by Cold Weather and Strong Wind — Aid Rushed From Nearby Towns — Coffee Served by Salvation Army

By Harry Belknap

FIRE which originated in a defective chimney, destroyed the 3-story brick mansion occupied by the Langer School for Boys in the Auburndale section of Newton, Mass., on the night of December 8. A delayed alarm, a broken hydrant, and bitterly cold weather hampered the efforts of the firemen. The building was situated on a hill and set back a considerable distance from the street.

Burning of the Langer School in Newton, Mass.

At 10:39 p.m. a telephone call was received from a teacher who lived in the school with four boys, stating that he had smelled smoke for some time and he thought that there was a small fire in back of the fireplace on the second floor. Engine Companies 5 and 2 and Ladder Company 1 were dispatched to the scene and as Engine 5 left quarters, the members of the company could see the reflection of flames which were even then going through the roof of the school.

Connection was made to a post hydrant on a 6-inch main and a line was run to the top floor. The fire was then going through the roof; there was fire in the basement; in the partitions on the first and second floor and the entire attic was involved. When the call was given to start the water it was found that no water came from the hydrant. Engine 2 had stretched a line from the same hydrant, but there was found to be only 18 pounds pressure due to a broken valve in the hydrant. The water department has charge of the hydrants in Newton.

Three lines were then run from another hydrant 2,000 feet distant on a 6-inch main with 150 pounds pressure. Meanwhile a bell alarm had been sounded at 10:49 and this was followed by a second alarm at 11:01. The flames raged fiercely and a portion of the roof collapsed before all the companies got into action. Engines 2, 1, and 5 drafted water from the Charles River. The total amount of hose laid by the Newton companies was 8,000 feet of which 600 feet was 3-inch and the rest was 2½-inch cotton rubber lined. The ladders raised were one 35-foot extension ladder, two 30-foot wall ladders, one 25-foot extension ladder, and two 25-foot wall ladders. An engine from Walthom laid 1,200 feet of hose. The Newton Fire Department lighting truck ren-

dered good service, using four 200-watt flood lights and one 500-watt flood light. An Eastman deluge set was utilized to advantage.

There were 75 officers and men at the fire under direction of Chief Clarence R. Randlett. Other chiefs at the fire were Chief George L. Johnson, of Waltham; Chief William H. Hill, of Belmont; Chief T. Robert Quinlan, of Needham; and Chiel Slaman, of Wellesley.

The following apparatus was in service: From Newton, one 750-gallon Maxim motor pumper, two 750-gallon American-LaFrance motor pumpers, two 600-gallon Maxim pumpers, two Maxim city service ladder trucks and one Kohler lighting plant on a Ford chassis, and one 750-gallon American-LaFrance motor pumping engine from Waltham.

The "all out" signal was not sounded until 7:50 a.m.

The 6-inch water main connected a half mile away with a 12-inch main and ran out to a dead end. There was one private hydrant in the yard on a 4-inch main. Apparatus from Wellesley, Needham, and Watertown "covered in" at the vacant Newton fire houses during the progress of the fire.

The school building was built in 1881 and was formerly the estate of Royal M. Pulsifer, later being known as the Castle Inn. It was situated 1,000 feet from the nearest street hydrant. The loss was estimated at $40,000. The building contained 21 rooms. Firemen suffered severely from the cold and were served hot coffee by the Salvation Army and town folk.

Four students and three instructors succeeded in carrying out a valuable collection of Indian and Mexican rugs and antiques and some personal belongings before they were driven from the building by the fast spreading flames. A stiff northwesterly wind was blowing at the time.

Date Set for N. Y. Chief Examination

Thomas C. Murray, Director of Examinations of the Municipal Civil Service Commission, New York City, has announced that the examination for Chief to fill the vacancy caused by the retirement of Chief John Kenlon, will be held January 20-22. On Wednesday, January 21, the examination will cover administration, Thursday on Laws and Ordinances, and Friday on Report.

In marking, Record and Seniority will count 50 and the Mental Examination 50. In reference to the written part, Administration will count 5, Laws and Ordinances 3, and Report 2. A mark of 70 per cent on the written part, is necessary to pass, and 80 per cent on the total.

The report will be of a technical character in accordance with the duties of the position. In rating, the principal consideration will be given to the knowledge of the subject displayed by the candidate.

Concerning record and seniority, beginning with the date of promotion to Deputy Chief, 80 per cent will be given. For each additional three months in the grade within five years immediately preceding the examination, one half per cent is added or two per cent a year. For each additional three months in the grade more than five years preceding the date of examination, one quarter of a per cent is added with a maximum rating of 95 per cent at the end of ten years. Additional points are given for official Fire Department Awards such as the Roll of Merit or for Commendation.

A Candidate's Conception of the Examining Board

The personnel of the examining board has not been announced but it is assumed that it will include members of the National Board of Fire Underwriters.

Chief Creegan of Rochester, N. Y., Retires

William J. Creegan, Chief of Fire Department, Rochester, N. Y., has been retired on his full pay of $4,935 a year and Deputy Chief Maurice Keating has been appointed his successor.

Chief Creegan retires after forty-seven years in the Fire Department and Chief since June 1, 1930. He was appointed a fireman on March 20, 1884; captain, July 2, 1890; Battalion Chief on December 10, 1901 and Deputy Chief on January 1, 1925. He served as Deputy Chief for ten years during the regime of Chief Frank A. Joynes, his predecessor.

Chief Keating became a fireman on July 3, 1890 and on November 1, 1893 was advanced to an engineer. On January 1, 1903, he became Lieutenant and two years later, April 1, 1903, he was promoted to Captain. On April 1, 1921 he was appointed Battalion Chief and on September 10, 1930, Deputy Chief.

Ex-Chief W. J. Creegan

Chief Maurice Keating

CORRESPONDENCE

Not in Near Proximity to Arctic Regions

To the Editor:

Just a year ago last November, the Capitol Theatre building, owned and operated by Famous Players, was officially opened in this city.

On the opening night, the famous radio announcer, Lowell Thomas, broadcast over the air that we were so far north that the theatre company had provided stalls in which the patrons could park their dogs and sledges.

Just to contradict the idea of our being in such proximity to the arctic regions, my department answered a grass fire on December 29, and, due to the mild weather, did not even take the trouble to put on their fire coats. No doubt this is an exceptionally mild winter. On December 15 a neighbor of mine picked a bouquet of flowers in his garden.

I might tell you at this time that I greatly appreciate your monthly magazine as it is a great help to anyone in our profession, since different topics are taken up each month and fully discussed.

Trusting that you will have a Happy and a Prosperous New Year, I am,

Yours truly,
W. L. Andrews,
Fire Chief, Sudbury, Ont., Can.

Carl A. Smith has been named president of the Uniformed Firemen's Association, Troy, N. Y.

At the annual exercises of the high school, Lakefield, Ont., Canada, Chief Allan H. Clark presented four medals on behalf of the Fire Prevention League to the winners of the Essay Contest that was held in connection with the observence of Fire Prevention Week. It is an annual event. This year, one of the prizes was won by Chief Clark's daughter.

FIRE PROTECTION SYSTEM OF AN ORGANIZED COMMUNITY

This Summer Resort, After Many Fires, Now Has Ample Fire-Fighting Facilities—Fire Boat Unique Feature

By Dr. C. V. Bachelle
Chief, Fire Department, Delavan Lake, Wis.

SOMETHING uniquie in the way of fire protection has been developed at Delavan Lake, Wis. Like all other ventures of a similar nature, difficulty was experienced in raising funds for the purchase of the necessary apparatus and equipment to safeguard the community.

First, it may be well to explain the situation as it exists there. Delavan Lake is a popular summer resort in southern Wisconsin, within two hours drive from Chicago and its shores are lined with beautiful summer homes of Chicagoans, mainly. It has three or four large hotels and a number of aggregations of cottages, like subdivisions, comprising anywhere from twenty to two hundred cottages, all frame construction. The lake is about five miles long and averages about a mile wide, with a roadway circling it at a varying distance of from an eighth of a mile to half a mile back from the shore, which is about fourteen miles in length. The population about the lake during the summer is four thousand.

This district was without fire protection of any kind for many years and of course had numerous fires, often spreading from one cottage to another until several had burned and in one tragic instance two children were burned to death, when they might have been saved had there been any fire fighting equipment. At this fire eleven cottages were burned.

The residents about the lake have for many years had what is termed the Delavan Lake Improvement Association, which is a voluntary organization of about 170 members, and is maintained by small annual dues ($10). This association does whatever it can to help improve things about the lake and has committees in charge of various activities and the chairmen of these are men of prominence in business and social activities in Chicago, who give their time and efforts freely for the general good. One such committee is on membership, one is to see to the stocking of the lake with fish, one sees that the sanitary laws are observed, another looks after the lake level, which is controlled by a dam at the outlet of the lake, one is the Road Committee and cooperates with the local officials in keeping the roads in good order, and lastly there is a Fire Protection Committee, appointed after the above mentioned tragic fire.

This committee sought the advice of an experienced fire fighter, Division Fire Marshal John P. Stahl, of the Chicago Fire Department, a frequent visitor and close friend of the Chairman of the committee, Dr. C. V. Bachelle of Chicago, and after a careful study of the conditions about the lake, his advice was followed in planning the department and the equipment was installed by degrees.

Upper—Chief C. V. Bachelle in His Car. Center and Lower—Two of the Delavan Lake, Wis., Fire Apparatus

Chemical Engines Installed

The funds for this had to be raised by a thorough and painful canvass of the members for subscriptions. This was not accomplished with ease, for many who were approached did not believe the plan feasible or possible. However, finally a four-tank chemical engine, on a truck chassis, with full equipment of ladders, hand pumps, foam extinguishers, axes, pike poles, first aid outfit, lung motor, salvage covers, etc., built by Pirsch, was installed as the first unit. This was an immediate success and did good work with its crew of volunteers. It was soon found that the territory was too much for one engine to cover, so the following year another truck with similar equipment, but with one large 100-gallon chemical tank, was stationed on the opposite side of the lake. On that side they also have the cooperation of a small chemical engine, a two-tank affair, belonging to an organization which is a member of the association. So that gave the community the protection of three chemical engines with a combined capacity was over 300 gallons.

Fire Boat Added to Department

As the interest of the lake people in the Fire Department developed it was found possible to add a fire boat to the department so that water could be gotten anywhere about the lake. The boat was all the more necessary on account of the numerous high and steep banks making the approach of land companies to the water impossible at such places. Therefore, about three years ago a second-hand boat was secured and a Barton pump installed in this equipment, which served very well.

Since then, to further protect the territory, which as before stated is fourteen miles about the lake, two more engines, Pirsch equipped, have been installed. These are also equipped with Barton pumps, booster tanks, hand pumps, inhalators, first aid outfits and all the lesser equipment. Therefore, now the lake has an engine company every two miles about its circumference.,

Up-to-Date Boat Replaces Old One

This year the old fire boat was replaced by a new Chris Craft, 24-footer, powered with 100 horse power Chrysler marine motor, and the latest model 550-gallon Barton pump, the old boat having become unseaworthy, and the pump used in it was put in service on one of the fire engines. This new outfit has been very satisfactory and is most efficient.

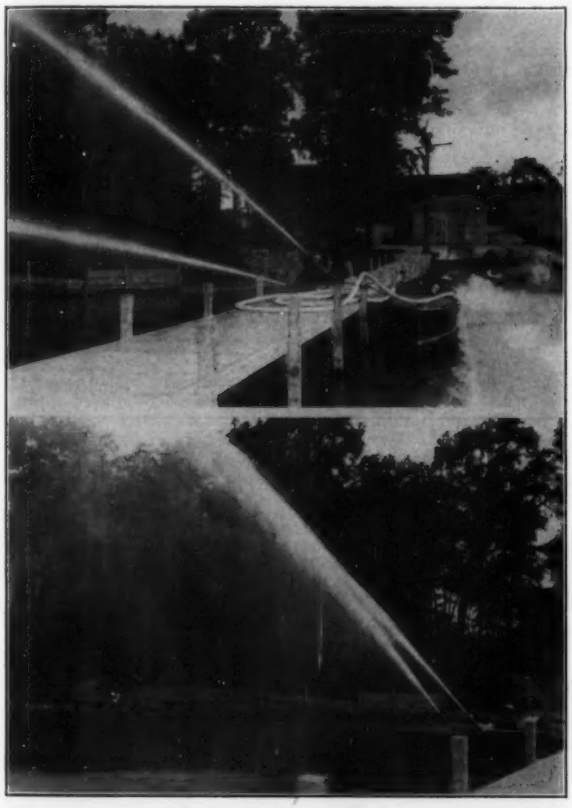
An interesting feature is the manner in which the boat is housed. It is slung up above the water under a wide-spreading roof, between two narrow crib piers, by means of sets of tackles, one fore and one aft, which are actuated by a shaft running the whole length of the pier shelter. Thus the boat is protected from the battering of the waves in rough weather, and rain is kept from the hose and equipment. When an alarm comes in, a release catch is sprung and by means of a brake the descent of the boat is controlled and in less than half a minute the boat is in the water ready to go. It has a speed of between 30 and 40 miles per hour and is also used as a rescue company in cases of drowning or other water accidents. It carries 400 feet of 2½ inch hose and at fires is reinforced by the land companies carrying additional hose.

Co. No. 6 on Private Estate

The last company to be installed is No. 6, and is located on the estate of Chas. A. Stevens, a prominent Chicago silk

merchant, who has a beautiful and extensive estate on the lake, and who as a hobby raises fancy Toggenburg goats, which have a national reputation. It is the interest that such men of business put in their country homes and community and their help that have made possible this unique and practical enterprise, far from the great city in which their main activities are expended.

These companies with the exception of the fire boat are in service all winter, as many of the cottages are occupied



The Fire Boat at Delavan Lake in Action and (Upper) Operating Streams Supplied by Fire Boat on Land

all the year round and there is an increasing tendency of people to come to the lake for week-end parties, and for winter sports. With the overheating of houses and chimneys, it makes the fire service necessary.

From spring to fall of the year every two weeks, meetings are held, and in the winter once a month, at which fire problems are discussed and methods of handling especial fire hazards about the lake are considered or else drills are held. At such times often fire officers of experience from Chicago are present as invited guests and give volunteers instruction and advice. Among these were F. C. McAuliffe, Chief of the Chicago Patrols and Division Marshal Stahl of the Chicago Fire Department.

The officers of this department are C. V. Bachelle, Chief; A. G. Granath, First Assistant, Chief; and E. G. Buzzell, Second Assistant Chief.

Thus a lakeside summer resort has furnished its own up-to-date and efficient fire protection by voluntary subscription and maintains it and its other activities by very modest annual dues.

Firemen of Reeseville, Wis., voted to purchase new fire apparatus.

Irving Labensky, Superintendent of Fire Alarms, New London, Conn., died on Christmas day from injuries sustained when an automobile struck a ladder on which he was working. He was engaged in carrying out his duties in connection with the fire alarm system at the time of the mishap.

Fires Decrease in New York City

There was a decrease of 386 fires in New York City last year. Loss figures are not available at this time, due to pending adjustments and settlements of claims, but records of Chief Fire Marshal Brophy's office indicate that there is likely to be a decrease in damages by fire and water.

The record of fires by boroughs is as follows:

1931	Borough	1930
9685	Manhattan	10523
4766	Bronx	4813
1894	Richmond	1696
10061	Brooklyn	9989
4599	Queens	4370
31005		31391

With the exception of the years 1931 and 1927, fires have increased annually, the records at headquarters disclose. In 1927 there was a drop of 844 under the record of 25,185 fires in 1926. The largest increase in ten years was in 1929 with 3,774 more fires than in 1928.

In 1931 there were 116 persons killed by fire, an increase of three over 1930. There were 539 persons injured at fires last year, an increase of 122 over 1930.

The Fire Department erected and opened eleven new fire stations in 1931 and organized three new fire companies. A new fireboat, the John J. Harvey, was built and placed in service, the first in ten years. The department acquired 92,000 feet of hose and 30 pumping engines, 10 ladder trucks, 6 tractors and 21 motor cars for chief officers.

Two hundred and seventy-one firemen were appointed, two were reinstated, sixty fire-fighters retired on pensions of whom John Kenlon, Chief of Department, was one; eleven resigned, three were dismissed and three were dropped during their probationary period. Forty-five members were promoted, 43 died from natural causes and six from injury or illness in the line of duty. One hundred and ninety-four members were cited by the Board of Merit for valor or unusual efficiency.

Wm. Jerome Daly.

Policies Cover Damage from Dynamite

Where dynamite is used to prevent the spread of a conflagration, the owners of the property dynamited may recover on their fire insurance policies.

This decision was rendered by the Alabama Supreme Court in deciding a case which developed as a result of a conflagration in Montgomery on June 4, 1927. In the case of the Central Insurance Company vs. Cook, an appeal was taken from the decision of the Montgomery Circuit Court. Cook's building was damaged by the explosion when the Chief ordered a nearby building dynamited to stop the flames which already had ignited a building on an opposite corner. The insurance company claimed its policy contained an exception to damage resulting from an explosion. The Circuit Court decided in favor of the insurance company.

The Supreme Court held that the damage resulted from a friendly agency reasonably necessary to prevent the spread of the fire. The use of the explosives was not within the contemplation of the exception contained in the insurance policy, and the case was therefore reversed.

Dinner Tendered Fire Marshal Hurley

A testimonial dinner to James M. Hurley, former mayor of Marlboro, who was recently appointed State Fire Marshal by Governor Joseph B. Ely, of Massachusetts, was held on the night of Dec. 28 at the Pine Grove Inn, Marlboro, Mass. Robert H. Jameson, Chairman of the Industrial Committee of the Marlboro Chamber of Commerce, acted as toastmaster.

Among those present were Judge Raoul H. Beaudreau, Senator David I. Walsh, Mayor Amedee A. Martel, of Marlboro; Mayor Bernard Doyle, of Leominster; Chief Selden R. Allen, of Brooklin, Second Vice-President of the International Association of Fire Chiefs; Chief George L. Johnson, of Waltham; Chief James M. Casey, of Cambridge; Chief Charles L. McCarthy, of Worcester; Chief Robert Tappin, of Gardner; Ex-Chief Edward F. Saunders, of Lowell; Asst. State Fire Warden John P. Crowe, of Westboro; and Chief Samuel Daoust, of Marlboro.

Harry Belknap.

New fire apparatus has been ordered by Miller, S. D., and delivery is expected soon.

CISTERNS SHOULD BE PROVIDED AS NEIGHBORING COMMUNITY EQUIPMENT

Pumpers Responding to Outside Areas, Frequently Find a Lack of Any Water Facilities —Storage Tanks Will Solve the Problem

By John W. McCarthy
Chief of Fire Department, Corning, N. Y.

FREQUENT calls for help outside of our city, prompts a thought that I feel is worthy of some consideration by the community calling for aid and which is unprepared to provide a supply of water for the modern pumper.

As I look back over the last few years and visualize the improvement in Fire Department equipment, I wonder if we have kept apace with the modern pumpers in that we are forced to harken back to the olden days when hand pumps and cisterns were in vogue. In many small communities, not a single effort is made to make it possible for motorized departments, answering vicinity calls, to be of assistance. This brings up the value of the ordinary cistern as a means of water supply when a fire has passed beyond the chemical stage.

Lack of Water Facilities in Small Communities

It has been my experience on many occasions, to be called with the pumper to smaller communities within a reasonable distance from the city, but when we arrived we found we had nothing to use, other than our own equipment.

Years ago the old hand pump, which has now grown up to the effective motor pumper, was a very valuable piece of apparatus, but of no value unless there was an adequate water supply. The practice then was to construct cisterns on various street corners and in other locations, to insure a supply for the hand pumps. These cisterns were kept filled with surface or rain water and were always available for fire protection.

With the evolution of fire methods the steam engine was born, and the same practice in small towns was continued to enable firemen to be of service. Now the motor apparatus has displaced these antiques of the early days, but still the condition of inadequate protection exists in those towns where there is no equipment or fire alarm system.

The days when fire pumpers, powered by steam, were taken from city to city, or to rural areas on special trains have passed, and with the arrival of high powered motor apparatus, coupled with rapid telephone alarm service, and good roads, permitting greater speed and wider coverage of territory, the present day department is in a position to be of real service to smaller communities. But there are many occasions when firemen are forced to stand by and watch property burn for the lack of water.

Provide Cisterns at Convenient Points

There are times, too, when it is necessary to lay 1,200 or 1,500 feet of hose, to the water supply. However, no adequate location or driveway is provided for the pumper at the source of supply. Many communities fail to recognize this important feature of protection.

My suggestion to keep in step with the motor apparatus, is to take a step backward and provide cisterns or some storage place for water, at convenient points, where short lines of hose could be used. These cisterns, however, should be located far enough away from buildings so that the pumper would not be damaged by fire or hampered in the pumping process.

The old type cisterns of many years was made of wood but with the present day methods it would not be difficult to construct such a storage tank of concrete, properly protected and covered. A quick operating opening could be provided for the suction hose, as well as placing the tank in such a location as to augment speed and attachment of the pumper.

Remote Areas of Cities Unprotected by Water Supply

The installation of these cisterns does not necessarily apply to the small towns and communities, but to the small and larger cities as well. There are many institutions, such as colleges, county jails, county poor homes, sanitariums, country clubs, private estates, etc., located in remote areas, some considerable distances from fire hydrants that are unprotected, simply because no provision has been made for either an ordinary water supply or a reserve. Farm buildings, hospitals and other properties remotely situated, are also included in this group.

Then again, in cases where there is some water protection for public or private buildings, there is always the disadvantage of having to lay a long line of hose. A cistern would immediately provide an additional supply that could be used by the first apparatus to arrive. Remote hydrants are thus left for secondary pumpers, the aggregate giving double water protection.

Source of Water Supply for Cisterns

With the installation of such cisterns the next question is the source of water supply. Dependent upon the locality, natural springs could be made available, or when in proximity to buildings, rain water could be directed into the storage tank. If neither was available it would be necessary to haul water from some accessible point.

It would be necessary to maintain a check on the tank by a visible float or other means, to insure an adequate supply at all times.

Size of Cisterns

Such a tank or cistern should be constructed of not less than 45,000 gallon capacity so that even with a conservative minimum usage of 350 gallons a minute, the tank would provide a supply of water that would last approximately one hour and 28 minutes, with one line or hose, or one hour and four minutes with two lines of hose.

There should be some ladder equipment, to at least reach the roof as well as lower sections of a building, as it is not possible for apparatus answering community calls, to carry such equipment.

Cisterns could have a highly decorative and ornamental effect to correspond with beautiful buildings and grounds. A small water pump could be installed in a nearby building to circulate the water and give a fountain effect without any loss of water.

In the colder climates, where freezing would mean chopping through ice for the suction, a steamer hydrant connection could be installed below the frost line to prevent delays in making connections.

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Only ninety seconds elapsed from the time a match was applied to an alcohol test fire until the blaze was completely isolated by solid curtains of water, in a recent test of a sprinkler system installed by the Viking Automatic Sprinkler

Test of Sprinkler System in Airplane Hangar

Company in the new Century Air Lines' terminal building at the Chicago Municipal Airport.

This installation is one of the few of its kind in the country using floor jets as well as overhead valves. The wide spread of airplane wings necessitated the floor installation.

The water curtain system operates independently of the deluge sprinkler system and is regulated by a valve that is sensitive to the rate of temperature change instead of opening when a specific temperature is reached. Although the heat generated by the test fire probably was not excessive, the rapid rate of change released the valve. The heat was, of course, insufficient to release the deluge sprinkler valves.

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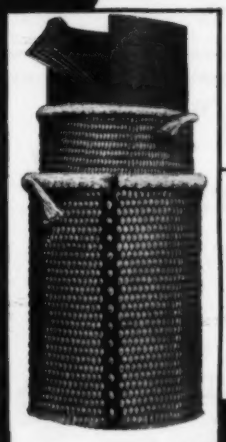

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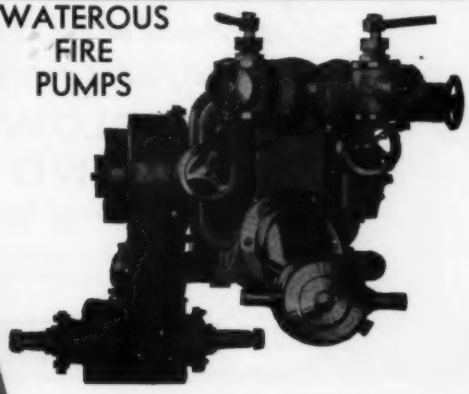

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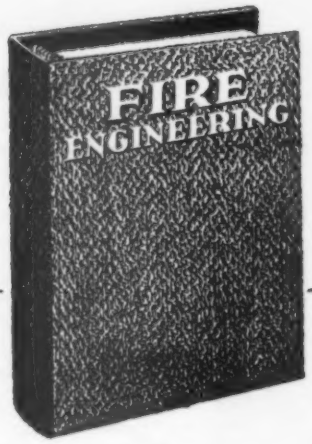

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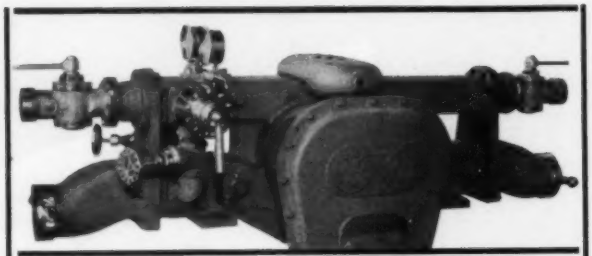

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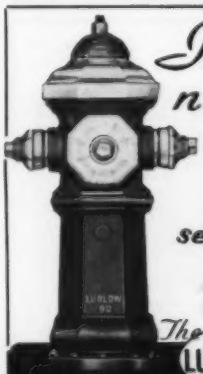

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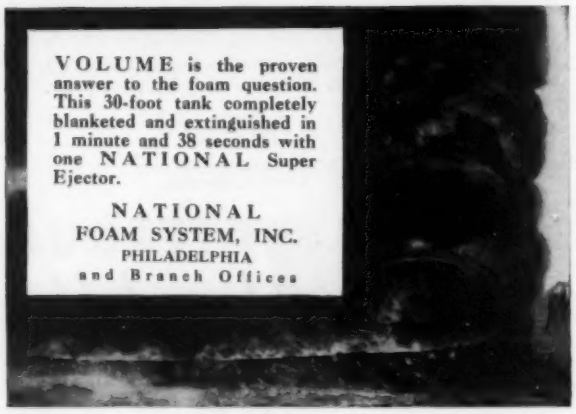

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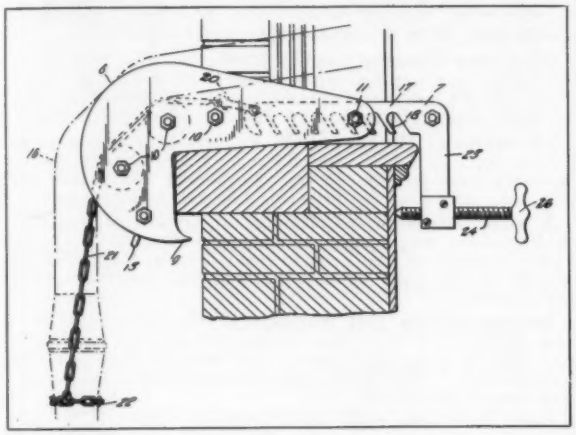
FOAM SYSTEM, INC.
PHILADELPHIA
and Branch Offices

New Type of Fire Hose Hoist

A patent has been granted to George W. Gardner and John R. Underhill, of Greenville, N. C., for their design of a fire hose hoist.

In use, the parts 6 and 7 are adjusted across a window sill as shown in the sketch and the screw is turned to clamp the device in position. A cable is then passed through the



Sketch of New Type of Fire Hose Hoist

eye of arm 13 and the cable used to hoist hose, ladders or other fire equipment to the window or other support. When the device is used in connection with hose 16, the hose is pulled over the rollers 14 and 15 so that these rollers form guides and enable the hose to be easily handled without injuring the hose. The chain will permit a certain amount of movement and at the same time hold the hose in its adjusted position.

H. K. Smith, of Redding, Cal., Injured

H. K. Smith, Assistant Chief of Redding, Cal., Fire Department and Secretary of the Northern California Firemen's Association, lost the sight of his left eye as the result of cinders and plaster being forced into the eye ball by a high pressure stream. He was confined to the hospital for two months.

New York 8-Hour Day Bill Killed

The bill drafted for an eight-hour day for members of the New York Fire Department was killed in the Aldermanic branch of the Municipal Assembly. The bill, strongly advocated by members of the Uniformed Firemen's Association, had been in committee for about a year.

Merchants Finance Department Project

Wheeling, W. Va., offers the rest of the country a unique but effective method of securing Fire Department improvements even though the money is not in the treasury and the bonded indebtedness has reached its limit. Fire Department needs became so acute that Mayor-Manager T. Y. Beckett finally went to several of the city's leading business men and outlined to them the need for a larger and more modern fire headquarters and fire alarm central office. He succeeded so well in convincing them, that a Citizen's Fire Association of eight men was formed. The members agreed to back up Mayor-Manager Beckett.

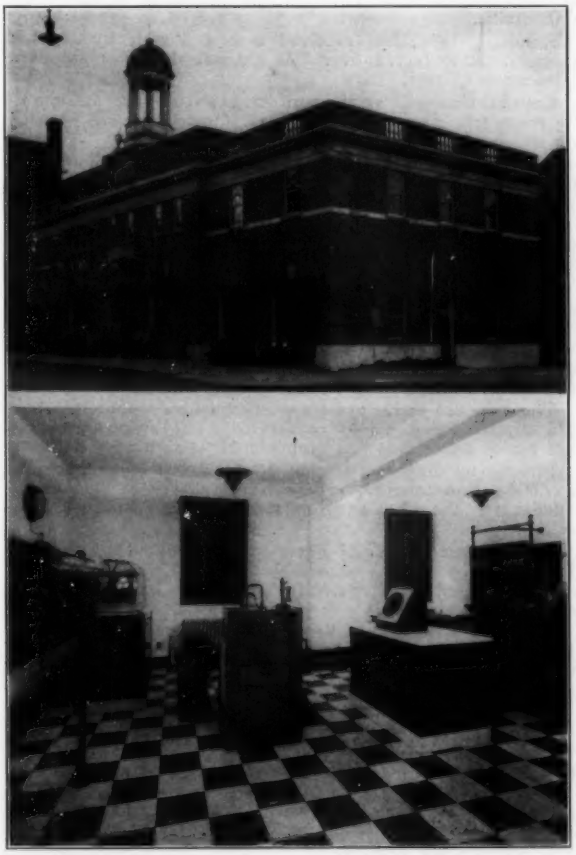
The association began to function without loss of time and arranged with the banks to loan the necessary funds for erecting new apparatus for new fire headquarters, the loan to be backed by the association and leased to the citizens for a long period at the end of which the city would repay the association for the money advanced. The equipment and property would then be turned over to the city.

E. B. Franzhein is the architect who prepared plans for the new headquarters which is 130 feet long by 75 feet deep and two stories high. In the basement is a large hose drying and boiler room, also store and work rooms for the electrician. On the first floor is a three-door apparatus room which at present accommodates two American-LaFrance pumpers and one American-LaFrance ladder truck. Doors to these rooms are electrically operated, opening and closing automatically. Special garages have been provided on this floor for Fire Chief Edward A. McGranahan's car and the police patrol.

Upstairs are quarters for the Fire Chief, Assistant Fire Chief and the Police Chief. There is also a dormitory with accommodations for 18 men, a lounge, kitchen, bath and shower rooms. The lounge is light and airy and serves as a reading and rest room. The kitchen is equipped with an electric stove and an electric refrigerator. The Chief also has a large waiting room. Eight showers, eight lavatories and toilets of all tile construction and also a drying room with forced heating for wet clothing is available for the firemen. Latest fire resistive materials were used throughout.

Quarters for the fire alarm central office are a part of the same building but are set off from the rest by means of special fire resistive construction. The equipment is entirely of Gamewell manufacture and includes the following: One 16-circuit Protector Board; one 16-circuit Repeater; one Peerless Transmitter; one Recording Set; one 10-circuit Automatic Storage Battery Switchboard; one 6-circuit Automatic Storage Battery Switchboard.

A telephone switchboard was installed by the local telephone company. Separated from the operating room is another room which accommodates Gamewell Iron Clad Battery set up on three 90-inch five shelf Battery Racks, and kept charged by means of two 3½-K.W. motor generators. In this room is also located the motor generator control panel.



Two Views of the Fire Department Building

Upper, new fire headquarters erected in Wheeling, W. Va., that was financed by business men in cooperation with Mayor-Manager Beckett. Lower, the central fire alarm office which is located in a fire resistive room in this building.

H. A. Friede.

FIRE DEPARTMENT ACTIVITIES

Reedley, Cal., is considering the purchase of a new pumper.

Lodi, Ohio, has placed an order for a 300-gallon Prospect pumper.

Plattsburgh, N. Y., is considering the purchase of new fire apparatus.

A house to house canvass is being made in Tigard, Ore., to raise funds for the Fire Department.

South Bend, Ind., has ordered a 750-gallon Boyer pumper to be mounted on a Pierce-Arrow chassis.

A move has been started to form a local of the International Association of Fire Fighters in Akron, Ohio.

Fire apparatus mounted on a Ford chassis has been delivered at Grayville, Ill. It has an 80-gallon booster tank.

A meeting has been held in Elwood, Ind., to consider plans for the protection of rural property within a seven-mile radius.

The Chief of Crown Point, Ind., threatened to resign when the Council voted to discharge four firemen as an economy move.

The County Fire Department of Baltimore, Md., has received a new pumper which will be placed in service at Catonsville.

Kenosha, Wis., has received a new Pirsch 1,000-gallon pumper. It delivered over this amount during a standard Underwriters' test.

Construction will start soon on a $60,000 fire station to be erected in Norwalk, Conn. Only local labor will be used on this improvement.

Crawfordsville, Ind., has recently added a 750-gallon Stutz pumper provided with a 100-gallon booster tank, shatterproof windshield and other modern accessories.

The new fire alarm system of New Rochelle, N. Y., completed at a cost of $80,000, has been given formal approval by the National Board of Fire Underwriters.

The cornerstone has been laid for the new central fire station being erected in Newport, R. I. According to the contract, the station should be completed by May.

California chiefs have sent out warnings to persons all over the state concerning the danger of carbon monoxide poisoning when improperly using gas heating stoves.

The new fire alarm system of Youngstown, Ohio, costing $75,000, has been placed in service. The system has 216 fire alarm boxes, but it is capable of handling 8,000 boxes.

Firemen of Roanoke Rapids, N. C., are striving to obtain a 1,000-gallon pumper. There is no money in this year's budget for the purchase but the campaign has not been sidetracked.

City officials and Chief Petersen of Escondido, Cal., have inspected fire stations in nearby towns to obtain ideas for a contemplated fire house. It is planned to build the station on city park ground.

A new fire house has been recently opened in Glenfield, Pa., constructed by the volunteer firemen during their spare time. It is of brick and concrete block construction, one and one-half stories high.

The Board of County Commissioners received a petition for the formation of a fire district for an area outside of Coeur d'Alene. If the petition is favored, the city will house and man the fire apparatus.

The City Council of Williamsport, Pa., arranged for the abandonment of No. 1 fire station. All the equipment and apparatus is to be moved to No. 2 fire station where the headquarters are located.

An emergency truck has been placed in service in the Union City, N. J., Fire Department. It will be equipped with a pulmotor and other rescue apparatus, and in addition will be used for salvage work.

Four firemen of Des Moines, Iowa, were injured, three seriously, when a ladder truck crashed into a street car. The street car was derailed by the impact, while the front part of the truck was demolished.

Three Firemen of Spokane, Wash., were injured when the apparatus on which they were returning from a fire was struck by an automobile. After the crash, the apparatus struck a telephone pole and a fire hydrant.

Beverly Hills, Cal., has awarded a contract for the construction of a two-story fire station. The building will be of reinforced concrete construction, and will conform in design with the new city hall now under construction.

Chief John Oliver of Council Bluffs, Ia., died recently at his home from cerebral hemorrhage. He was sixty-seven years old and had been suffering from high blood pressure for some time. He joined the Fire Department in 1899.

The Mayor of Mt. Vernon, N. Y., vetoed bills designed to provide for a new firehouse site and for amendments to the firemen's pension bill. It was considered likely that the local law amending the firemen's bill will be revamped.

A winter school for the training of firemen of San Bernardino, Cal., was announced by Chief Ernest E. Leffen. Every member of the department is required to take the course. Every piece of apparatus in the department has been overhauled.

Recommendation that members of the Richmond, Ind., Fire Department be placed under civil service regulations was made in a report issued by the National Board of Fire Underwriters. The Board also recommended that twenty-four firemen be added.

Plans have been made for a firemen's school to be held in Billings, Mont., in August. The first firemen's school in the state was held at the convention in Bozeman. The school which is to be held August 22-25 will precede the regular annual convention.

Gov. Franklin D. Roosevelt of New York was elected a member of Union Hose-Engine Company 2 of North Tarrytown, N. Y. In a letter to the volunteer firemen, the Governor accepted the membership. His predecessor, former Gov. Alfred E. Smith, is also interested in Fire Departments.

Jay W. Stevens, State Fire Marshal of California, spoke at the Contra Costa County Firemen's Association meeting held in Richmond. He told of the recent disastrous fire in Berkeley, when fourteen firemen were seriously burned. C. R. Purgeon of Pittsburgh was elected President and C. E. Sellick of Pittsburgh, Secretary-Treasurer.

Recommendations were made by Chief Victor H. Veit of Stamford, Conn., that twelve additional firemen be added and that a fire house be opened in the north end of the city. During the year the firemen made 15,558 inspections. He also recommended the purchase of a 1,000-gallon pumper to replace one that has been in service since 1911.

The Safety Council Division of the Dayton, Ohio, Chamber of Commerce has provided five by seven-inch gummed labels to be attached to wooden barrels that are being used by some housekeeprs for the storage of ashes. The stickers bear the warning, "Wobden Barrels Are Dangerous for Hot Ashes and Combustible Refuse." The ash collectors are instructed to paste one on each wooden barrel they find that is used for this purpose.

Provisioning fire-fighting crews was one of the topics discussed at the conference of intermountain foresters held in Ogden, Utah. It was recommended that separate boxes of food be prepared for each crew and that the rations be marked for each meal for a three-days campaign. M. P. Bailey, State Fish and Game Commissioner for Idaho, urged that better advertising of an educational nature be conducted through sportsmen's associations.

Practical jokers stole the new pumper of the Hanover, N. J., volunteer Fire Department, and it was not until some time later that the $4,000 pumper was found in Livingston Township, more than eight miles from the fire house. Except for a broken panel light, the pumper was in good condition. It is believed that the parties involved drove around with the apparatus until the gasoline supply was depleted.

Continuing a custom that was started three years ago, firemen of Topeka, Kan., repaired old discarded toys for distribution to the poor children of the city. By collecting broken toys from stores and old toys from the residents throughout the year, the firemen were enabled to start their repair work three months in advance of Christmas. The service of forty firemen off duty, working for two days, was necessary to distribute the toys. Paint and material used to repair the toys were donated by local merchants.

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The "CENTRAL" Chimney Fire Extinguishing Fusee

WILL EXTINGUISH ALL KINDS OF CHIMNEY FIRES WITHOUT THE USE OF WATER OR LIQUID CHEMICALS

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FRICTION CAP SAFETY IGNITION

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It is economy to buy the best in Fire Hose

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CHIEFS everywhere find that it pays to buy Paragon or any one of the other famous brands of Eureka Fire Hose. Each brand fills a particular need, and they all represent the greatest dollar for dollar value it is possible to get in good fire hose.

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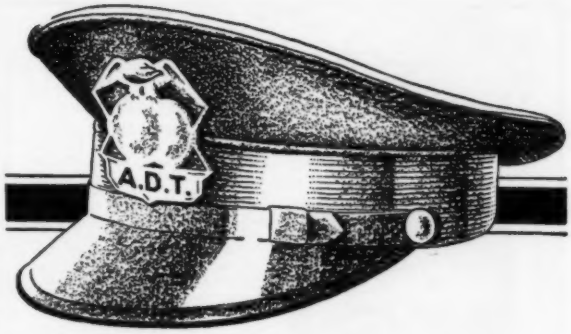

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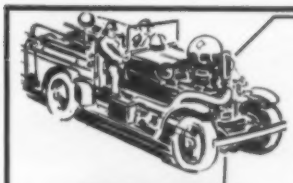

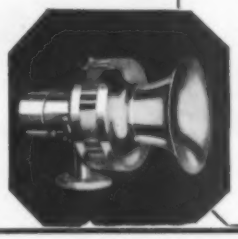

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Builders of equipment to meet your requirements. Specializing in Apparatus for Rural Fire Fighting.

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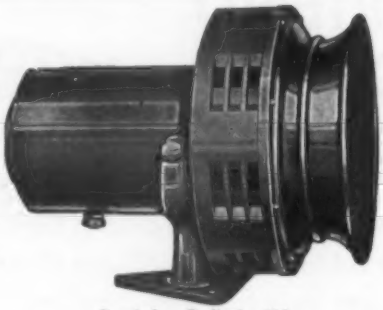

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The Anderson Coupling & Fire Supply Co.
Mfrs. Motor Fire Equipment and Fire Supplies
Kansas City, Kansas

Number, Please!

You'll find it (1-112) listed on page 41. Literature on any equipment will be sent on request.

FIRE ENGINEERING

PROPOSED IMPROVEMENTS

Lonsdale, R. I. — Reports state Prospect Hill, Lonsdale fire district to replace hand drawn fire apparatus with motor driven hose truck.

Kiel, Wis.—Plans being made by farmers in vicinity of Kiel for purchase of community fire truck. George Mattes, Rockville, Chairman of committee in charge.

Holyoke, Mass. — Board of Fire Commrs. recommended purchase of two new fire trucks and two new automobiles for deputy chiefs in annual report. Patrick Hurley, Chief of Fire Dept.

Agents Wanted

State Agents to sell on commission basis, nationally known artic.e to fire departments. Address: Box 430 c/o FIRE ENGINEERING, 24 W. 40th St., New York City. 1-32

Northern California Firemen Meet

Jay W. Stevens, Fire Marshal of California, gave an interesting talk on cooperation at the quarterly meeting of the Northern California Firemen's Association held in Arbuckle, December, 7. Charles Wilcher, ranger of Colusa, spoke on cooperation in rural districts and W. H. Gossett, ranger of Tehama County on cooperation in the Forestry Service. Hart Schrader, Jr., expert criminologist of Arbuckle gave an instructive talk on the arsonist.

About 150 delegates were present, including representatives from the Division of Forestry.

New officers of the association are Chief George W. Hazeman, Woodland, President; Chief O. B. Miller, Williams, First Vice-President; Chief S. Guy Lukens, Aburn, Second Vice-President; Chief O. E. Alley, Vacaville, Third Vice-President; Assistant Chief H. K. Smith, Redding, Secretary, and W. E. Smith, Redding, Treasurer.

The meeting closed with a banquet given by the ladies at the Women's Club House.

The next quarterly meeting will be held in Orland, Cal., some time in March.

Five Die in Rooming House Fire

Five persons lost their lives when the New Court Hotel, a 5-story brick rooming house in Springfield, Mass., was destroyed by fire on the night of December 26. The blaze was discovered at 12:25 a.m. and had obtained great headway before the first apparatus reached the scene. People were at the upper windows calling for aid and many were rescued by firemen over ladders. Others made their way down fire escapes, but some of those on the upper floors were trapped by the rapid spread of the flames.

The building was more than 25 years old with wooden floors and partitions and had long been considered a fire trap. The ground floor was occupied by stores. A water curtain on the rear of the Walker Block nearby aided in preventing a spread of the flames to other structures. During the progress of the fire the roof crashed in.

As soon as the first apparatus reached the scene, additional alarms were sounded bringing most of the engines in the city to the scene. It is claimed by guests who escaped that no gongs were sounded in the hotel corridors. A strong northwest wind fanned the fire. Chief William H. Daggett and Deputy Chief Taylor directed the department operations. The tottering conditions of the walls hampered the search for additional bodies in the ruins.

HARRY BELKNAP.

Church Destroyed in Elmira, N. Y.

Fire, which according to Chief John H. Espey, started from a short circuit in the ceiling, destroyed the auditorium of the Centenary M. E. Church in Elmira, N. Y., erected two years ago at a cost of $120,000. The damage amounted to $75,000.

Chief Espey directed the firemen who succeeded in checking the fire and prevented it from spreading to the annex. Flames had spread so rapidly that five minutes after the firemen arrived, the roof caved in. A hollow space between the plaster and a metal ceiling acted like a flue through which the flames raced. Where the arched ceiling joined the walls, other flue-like spaces were formed which helped to propagate the fire.

Madison, N. J., to Have New Station

Through the generosity of Mrs. M. H. Dodge, a niece of the late William Rockefeller, a new municipal building is to be presented to the Borough of Madison, N. J. The building is so arranged that the central part will be used for borough offices, the left wing for police headquarters and the right wing for the Fire Department.

The Fire Department section will be planned so that the basement will be used for hose drying and other department work. The apparatus room will be on the street floor and on the second floor there will be the firemen's social hall, kitchen and department rooms. It is said that a new fire alarm system will be incorporated in the construction of the building.

Architect's Drawing of the Borough Building for Madison, N. J.

At a meeting of the Stanislaus County Association held in Hughson, Cal., Chief W. H. Ham of Ceres was elected President and V. V. Van Linberg of Riverbank, Secretary. The next meeting will be held in Patterson.

CONVENTION DATES

Jan. 20—FIRE CHIEFS' EMERGENCY PLAN OF WESTCHESTER COUNTY, N. Y. Regular Meeting, Fire Headquarters, Chappaqua, N. Y. Secretary-Treasurer, Lieut. E. Riviere, Fire Headquarters, Larchmont, N. Y.

Jan. 23-24—SOUTHERN CALIFORNIA FIRE CHIEFS' CLUB. Next Meeting, Island of Catalina, Cal. Secretary-Treasurer, Charles E. Smith, Chula Vista, Cal.

March 17-18—NORTHERN CALIFORNIA FIREMEN'S ASSOCIATION. Next Meeting, Orlando, Cal. Secretary, Assistant Chief H. K. Smith, Redding, Cal.

May 9-12—NATIONAL FIRE PROTECTION ASSOCIATION. 36th Annual Meeting, Atlantic City, N. J. Managing Director, Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

May 11—DEL-MAR-VA VOLUNTEER FIREMEN'S ASSOCIATION. 3rd Annual Convention, Cape Charles, Va. Secretary, W. A. Karpa, Cape Charles, Va.

May 19—IOWA FIRE CHIEFS' ASSOCIATION. Annual Convention, Ames, Ia. Secretary-Treasurer, Chief L. R. Morris, Ames.

June—NORTHWESTERN OHIO VOLUNTEER FIREMEN'S ASSOCIATION, 60th Annual Convention, Gibsonburg, Ohio (exact date to be decided later). Secretary, Harry Smith, Supt., Water Works, Port Clinton, Ohio.

June 6-9—NEW MEXICO STATE FIREMEN'S ASSOCIATION. 10th Annual Convention, Raton, N. M. Secretary-Treasurer, Theodore A. Rosenwald, Albuquerque, N. M.

June 13-15—FLORIDA FIRE COLLEGE. 3rd Fire College, Daytona Beach, Fla. Address, Florida State Firemen's Association, Fire College Committee, Chief Paul D. Joyce, Chairman, Haines City, Fla.

June 21-24—ILLINOIS FIRE COLLEGE, 8th Annual College, University of Illinois, Champaign-Urbana, Ill. Director, Prof. L. H. Provine; Secretary, Asst. Chief Roy W. Alsip, Fire Department, Champaign, Ill.

June 21-24—NEW ENGLAND ASSOCIATION OF FIRE CHIEFS, 10th Annual Convention, Newport, R. I. Secretary, Chief John W. O'Hearn, Watertown, Mass.

July 11-14—MICHIGAN STATE FIREMEN'S ASSOCIATION. 58th Annual Convention, Monroe, Mich. Secretary, H. L. Williams, Luddington, Mich.

August—VIRGINIA STATE FIREMEN'S ASSOCIATION. 46th Annual Convention Alexandria, Va. (Exact date to be determined later.) Secretary, O. W. Dabney, Staunton, Va.

Aug. 2-4—INDIANA FIREMEN'S ASSOCIATION. 16th Annual Convention, Columbus, Ind. Secretary, Clem Smith, Post Office Box 520, Terre Haute, Ind.

Aug. 22-25—MONTANA STATE FIREMEN'S ASSOCIATION. 41st Annual Convention and 2nd Firemen's Short Course, Billings, Mont. Secretary-Treasurer, D. E. Moser, Billings, Mont.

Sept. 13-15—ILLINOIS FIREMEN'S ASSOCIATION. 45th Annual Convention, Orlando Hotel, Decatur, Ill. Secretary, Asst. Chief Roy W. Alsip, Fire Department, Champaign, Ill.

Sept. 21-22—NEW CASTLE COUNTY FIREMEN'S ASSOCIATION. Annual Convention, Wilmington, Del.

FALSE ALARMS

—Courtesy, Judge

"G'wan, beat it. I saw her first."

SELF PRAISE

Even though the city treasury was not very full, the city officials succeeded in financing improvements to the Fire Department. For that reason the Fire Commissioner was asked to speak at a nearby village meeting.

A late arrival to the meeting, asked an old negro in the corridor what was going on.

"Man making a speech," answered the negro.

"Who is he?"

"I don' rightly know, suh, but he sure does recommend hisself very highly."

The combination that dissolves gold the quickest is a boy and a girl engaged.

QUICKLY REVIVED

A motorist was being sharply reprimanded for failure to obey emergency signals caused by the approach of fire apparatus.

"Why didn't you stop when I whistled?" the traffic cop asked the motorist.

"I'm sorry, sir. I didn't hear you."

"Well, you'll get your hearing in the morning," answered the cop.

The secret of polite conversation is never to open your mouth unless you have nothing to say.

CAUSE FOR WORRY

The New Year was properly observed at the Fire Hall. It was the occasion of the department's annual ball. Early in the morning one of the members called up a local doctor who was interested in the fire service and who had lectured to the men on first aid.

"What is it?" asked the doctor when he answered the 'phone.

"I'm awfully worried, Doctor. We've been having a big party and Lem Sniffens has not been acting right."

The doctor who knew what a big party at the hall meant, asked, "But why bother me? Is he seeing elephants or something?"

"That's the trouble, doctor," was the reply. "The room is full of 'em and he can't see any."

Faint heart ne'er won fair lady—that's practically the only advantage there is in being faint-hearted.

NO CAPACITY

At a Christmas party given by the firemen for the poor children of the immediate vicinity, the men took keen delight to see that each child was happy and that the youngsters had all that they could eat. But they forgot the little pranks of childhood.

One of the fire-fighters took hold of a little boy and said, "Now Tom, I'm sure that you can eat another cake."

"No, thanks. I am full."

"Well put one in your pocket for later on," suggested the host.

"I can't. They're all filled up, too."

A sheik is a fellow who can go to sleep with a chorus girl in his lap.

JUST PERSONAL

A Rescue Squad located in the section of the city that had a large colored population, was looked upon as a sort of emergency medical center. The men often administered first aid, set broken fingers, treated cuts and so forth.

And so one day the men were not at all surprised to see an old Negro walk in and claim he was "having symptoms." He was questioned and among other rather personal things he was asked, "And how are your kidneys, Uncle?"

"Well, dey is all grown up now and some ob dem is married."

If any one calls you a fool, never asked him to prove it.

EXPRESSIVE

A visitor to this office related an incident that he experienced while the Department was doing welfare work in his city.

Toys, sweets and in some instances shoes and clothing were given to the children. The amount of the gifts depended upon a report of a welfare investigator.

One young fellow received nothing but a toy and some fruit and candy while his friend, in addition, received shoes and a coat.

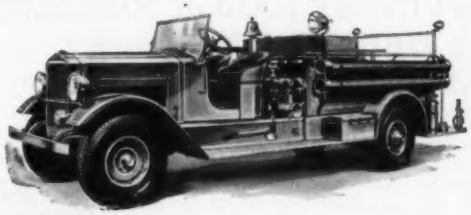
The one who was slighted said to one of the men, "You know, mister, when I saw the shoes you gave Mickey, it just made my feet water."

NEED FOR SPEED

"Pardon me," said the golfer as he caught up to the members playing ahead of him, "Would you mind if I played through? I've just heard that my house is on fire."

—Drawing by "Art" Espey

Captain: "Hey, Mugs, whatsa matter with Slim? Belly full of smoke?"
Mugs: "Yep! One of the Christmas seegars the Mayor sent us."



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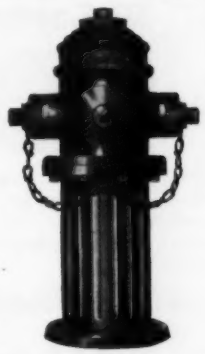

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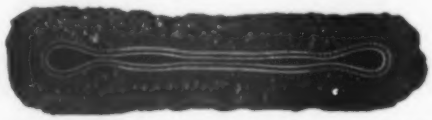

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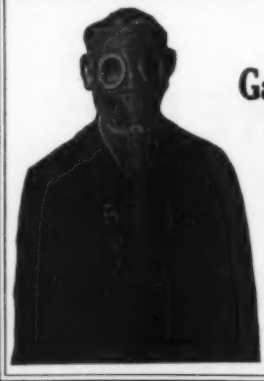

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